American Aviation

The Air Industry's Pioneer Independent Magazine

MARCH 1, 1950

ARMY LIBRARY FEB 1950 AERIAL RESEARCH

The Door Remains Open

THE IMPRESSION is rather widespread that because President Truman turned down flatly the Air Force proposal to develop jet transport prototypes, that this country's prototype program is dead. Fortunately such is not the case.

The way is still open for civil agencies to sponsor such a program. A legislative proposal to put the responsibility on the Civil Aeronautics Administrator is due out in the near future. Such a plan is expected to have the endorsement of the Bureau of the Budget and President Truman.

by W. W. P.

Under this proposal the government's assistance will take the form of testing responsibilities. Manufacturers will risk their own money in the design and construction, but the testing, which in modern airplanes is one of the most costly features of development, will be undertaken under the leadership of the CAA. This is probably as far as Federal assistance can go without interfering seriously with private enterprise.

Part of the testing program will be the operation of jets—probably starting with the North American B-45 bomber—on the civil airways in simulated or actual airline conditions. The Air Line Pilots Association and progressive aviation leaders of industry and government have long advocated a lengthy operational test period for all new aircraft. Past experience bears out the need.

It is to be hoped, however, that the prototype assistance program is not wrapped entirely with jet. The greatest single need in air transportation today, equipment-wise, is an economical feeder or short-haul airplane to replace the DC-3. The CAB's mercurial policy on feeders, with the attendant absence of a long-range stable market for new small transport has prevented the manufacturers from going forward with construction of this type of airplane. The civil prototype assistance plan, it is hoped, will bring forth feeder designs.

Another much-needed type is an all-cargo airplane suitable for both commercial and military purposes. A cargo plane with more economical operating characteristics than those now in service would result in lower cargo rates—and every cent subtracted from present cargo ton-mile charges to shippers will greatly expand the market available to the airlines.

As for jet, the need for action in this country has

(*Turn to page 8*)

Colonial's Operations Veteran

Branch T. Dykes, vice president-operations for Colonial Airlines, has just entered his 30th year in commercial aviation maintenance and operations activities. He went to work for the U. S. air mail service early in 1921 as mechanic, and later held executive maintenance positions with Stout Air Service, National Air Transport, and American Airways. He joined Colonial in 1941 as superintendent of maintenance, and is credited with major contributions toward maintaining the airline's safety record of 20 years operations without fatality.

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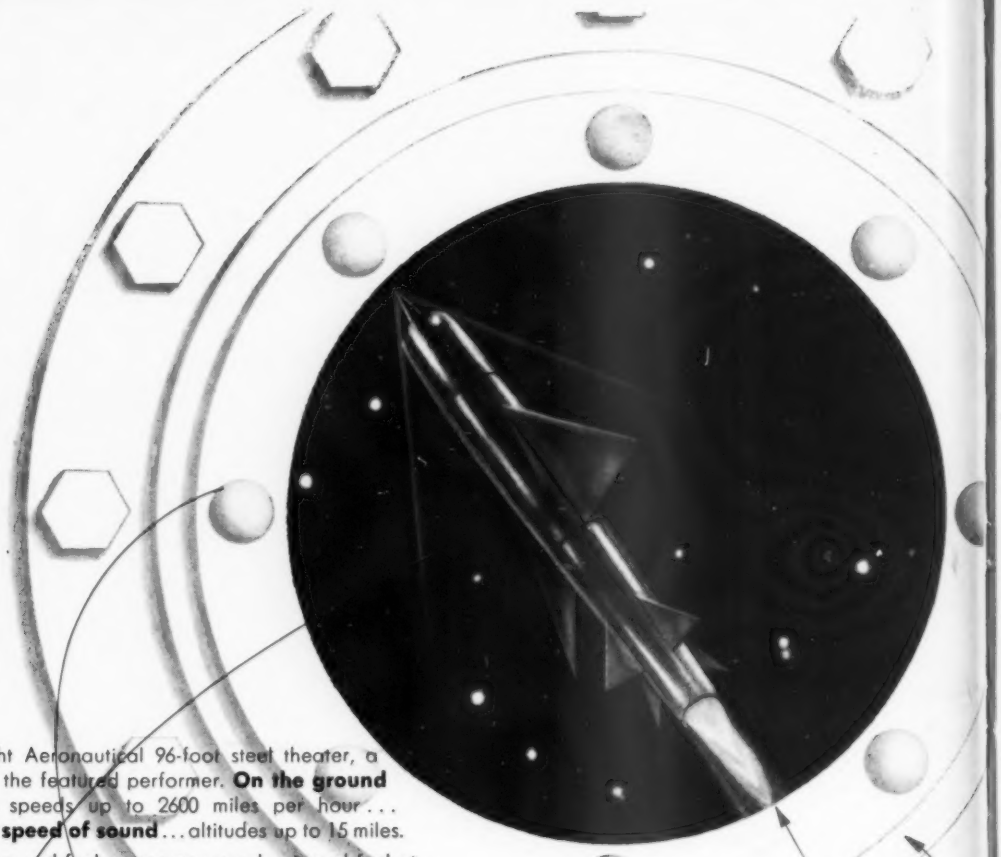
OTHER AMERICAN AVIATION PUBLICATIONS

AMERICAN AVIATION DAILY — OFFICIAL AIRLINE GUIDE — AMERICAN AVIATION DIRECTORY



In this new Wright Aeronautical 96-foot steel theater, a ram jet engine is the featured performer. **On the ground** it can simulate speeds up to 2600 miles per hour . . . **four times the speed of sound** . . . altitudes up to 15 miles.

Air compressors and fuel pumps can supply air and fuel at a maximum rate of 140 tons of air, 6,000 gallons of fuel every hour. The engine's tremendous bursts of power are accurately measured by electronic instruments.

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The terrific heat developed . . . up to 4000°F . . . is controlled by water cooling. Three 45-foot silencers muffle the roaring gas and steam jets.

Ram Jet Rehearsal...at Mach 4

Wright Aeronautical's new ram jet laboratory, largest in the industry and only one capable of testing from sea level to 80,000 feet, was built in cooperation with the U. S. Air Force.

Advanced research and experiment . . . applied to supersonic ram jets . . . is one important phase of Wright Aeronautical's long-range development of **power for air progress.**

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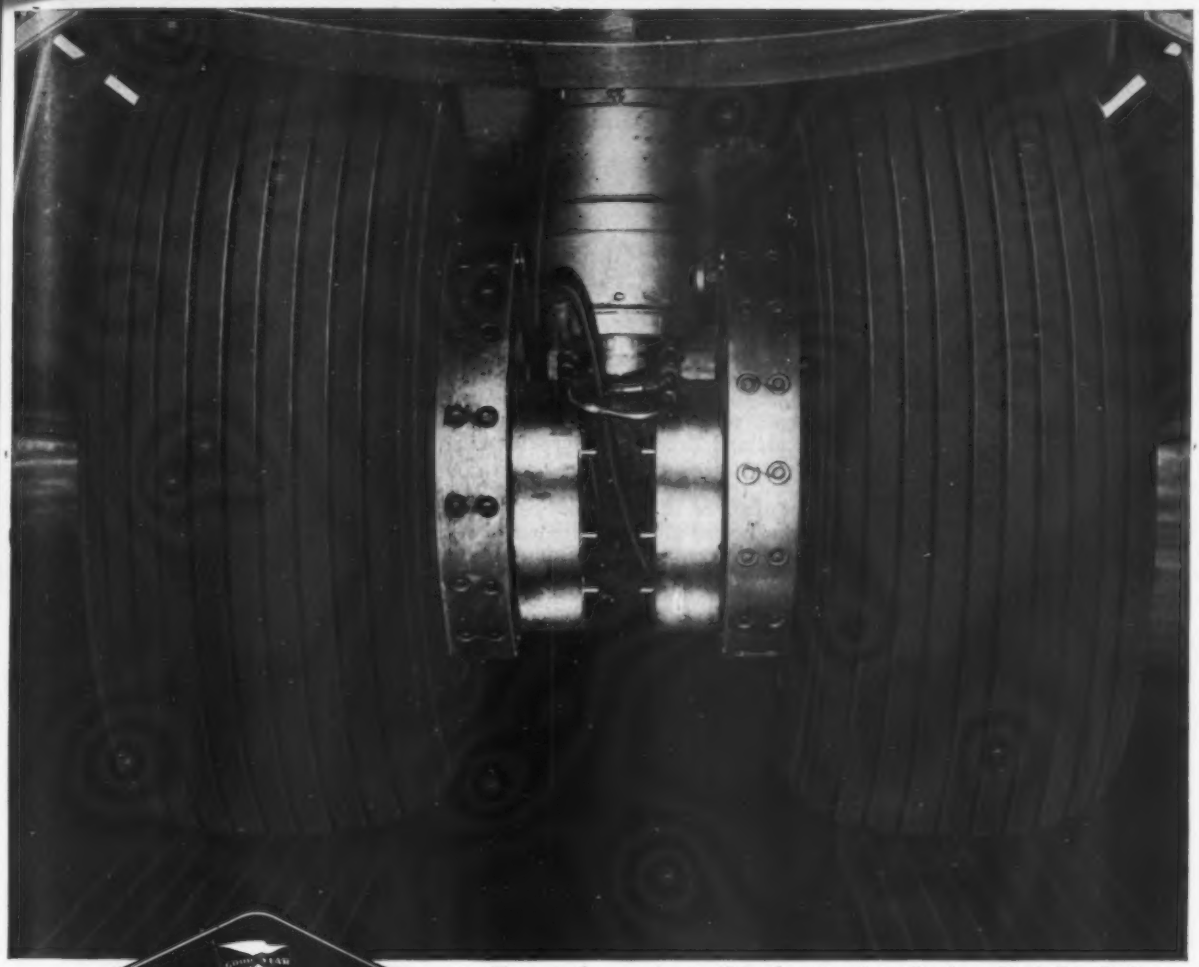
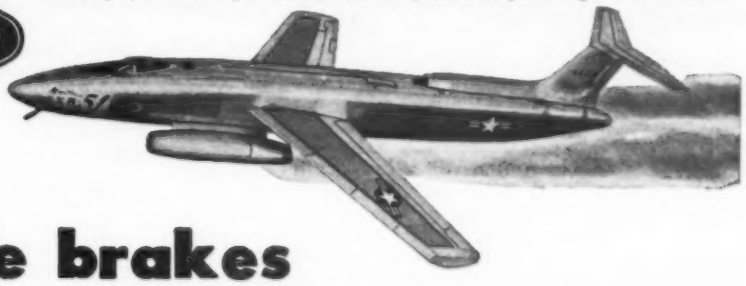
FIRST IN FLIGHT



Close-up of rear main gear shows location of two Goodyear Single Disc Brakes

GOODYEAR
AVIATION
PRODUCTS



Super-safe brakes
for a super-powered jet

"They fly fast; they land short." That's the braking problem on the new Martin XB-51. For this tandem-geared, super-jet is powered by three 5,200-lb.-thrust turbo-jets. To solve the problem, Goodyear designed and built Single Disc Brakes for the XB-51's unique tandem gear. For years of actual flight experience prove that Goodyear Single Disc Brakes are unequalled for maximum energy absorption within a minimum space. What's more, these super-safe brakes are self-cooling, self-adjusting, non-fading, require a minimum of maintenance. That's why you'll find *more aircraft are equipped with Goodyear brakes than any other kind.* For complete details, write:

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BACKGROUND & TRENDS

Pay-Subsidy Separation

The question of who is going to decide how air mail pay and so-called subsidy will be separated (if they are) remains undecided. The Ernst and Ernst report to the Senate Interstate and Foreign Commerce Committee recommended that mail pay be on the basis of a fixed formula covering handling costs at airports, plus a variable element based upon poundage directly related to the passenger rate structure. Subsidy, based upon "operating effectiveness and specific requirements of the individual carrier," would be paid from funds not a part of the Post Office budget. Ernst and Ernst is said to want the job of making detailed cost studies of each airline.

Meanwhile, Rep. Carl Hinshaw (Rep., Calif.), of House Interstate and Foreign Commerce, said he favors giving CAB funds to do studies on separation, while some members of the Appropriations Committee favor appointment of a select committee.

CAB Chairman Joseph J. O'Connell Jr. was very specific in testifying before a House Interstate group considering separation legislation. If CAB can have funds ($386,000) it can probably issue by July 1, 1951, separated temporary or final rates for a large number of airlines, he said. Three studies will be required (handled by outside consultants): cost of handling the mail; classification of operations, routes and carriers in the event the cost study reveals necessity for different rates for different classes of carriers, and investigation of economy and efficiency of lines other than the Big Four to develop cost standards on which to base their final separated rates. He was emphatic on one point: separation shouldn't be construed as separating the sheep from the goats, and the amount of subsidy wouldn't be a measure of efficiency and honesty of a carrier's management.

Prototype Progress

President Truman is reported willing to consider a well thought-out proposal for legislation providing government aid in a prototype testing program (as contrasted with a development program). It will be recalled that he turned down a Defense Department proposal under which government would have financed development of two cargo or transport prototypes. However, government civil aviation officials say he also wrote a letter to Defense stating he would consider a testing program handled by a civil agency and confined to a limited period. Civil members of Air Coordinating Committee have had this in mind all along and are drafting an appropriate bill, for aid in testing rather than development, with CAA or Commerce Department handling the funds. Where the military will stand is a question mark. Guesses are that it will either have no comment or will say it doesn't oppose such a bill. Civil officials are optimistic on getting the Presidential okay.

Shift in Position

Significant in 1949 was airlines' reduction in unit costs of operation. Interesting was the change in position among the low-cost operators. Curtis Barkes, vice president-finance of United Air Lines, says that based on 1949's first nine months, American Airlines was the low-cost operator at about 46.5c per revenue ton-mile, with UAL second at 50c and TWA third at 53c. Eastern, traditionally a top-placer, was first in 1948 with 53.9c, American second with 53.98c, followed by UAL and TWA with 54.6c and 57c, respectively.

Way Cleared for TCA

Now that Colonial Airlines has dropped its court fight to stop Trans-Canada Air Lines from operating competing service Montreal-New York, chances are that TCA will be quickly approved for the route. TCA expects to start by April if CAB acts that fast, and indications are that the case will be expedited. If Colonial had pressed its appeal to the Supreme Court, it would have meant a decision on government's power to make executive agreements. However, company said it abandoned appeal because of "increasing gravity of the international situation."

No Action on Lee

There's still been no action by Senate Interstate and Foreign Commerce Committee on nomination of Josh Lee to succeed himself as a member of CAB for a six-year term. Ultimate approval is expected, however. Independent Air Carriers Conference of America opposed nomination because Lee dissented from CAB's majority opinion in the air freight case which certificated four non-scheduled cargo lines.

British Cut-Back

British government has suddenly decided to cut both its military and civil aircraft programs. Reason given is economy. Exact nature of cuts was not revealed, but due to be hardest hit is RAF's Transport Command. The move will also probably result in skipping the piston-engined intermediate version of the Bristol 175, to be built for British Overseas Airways Corp., and an immediate start on the turbo-prop version. Manufacturers, particularly Bristol Aeroplane Co. and Handley Page Ltd., are pushing for reconsideration of the cuts, protesting that they'll have to lay off many employes. Handley Page is working on military transports, with Bristol making the engines. Bristol's work on the two Brabazon airliners isn't affected, however. English Electric Co. dismissed about 50 men working on the Canberra jet bomber, and a large number working on the Vampire jet were due to go.

All the Way on Tax Repeal

Domestic airlines want Congress to go all the way and repeal the 15% transportation tax on passengers. A reduction to 10% or 5% wouldn't be of much help, but full repeal would boost passenger revenues by some $20 million, according to Robert Ramspeck, executive vice president of Air Transport Association. Almost all of this increase would be profit, he said, since airlines' load factors are 55% to 65% and they have available excess capacity that could be used up with only a slight rise in operating costs.

Aleutian Airways

Three commercial airlines will have operating problems because of the Air Force decision to close its Aleutian airway system due to a cut budget and attendant personnel shortage. Particularly important to Northwest Airlines, Canadian Pacific Air Lines and Reeve Aleutian Airways are facilities on Shemya Island. Air Coordinating Committee is considering AF offer to turn facilities over to "other government agencies." It is expected that Shemya may be taken over by a private contractor.

Most versatile of cargo-carriers – the Boeing C-97 Stratofreighter

CATHEDRAL? No—just the 71⅓ foot long (10½ feet wide—7½ feet high) upper deck of the Stratofreighter! Note, at rear, self-contained "drive-up" ramp (in closed position).

The great twin-deck Boeing C-97 Stratofreighter—sister ship of the Stratocruiser—is a working teammate of the new Boeing B-50 Superfortress.

The only military transport with altitude-conditioning, the roomy Stratofreighter is quickly adaptable to any type load. As a hospital plane, for example, it carries 86 litter cases comfortably.

It is the fastest military transport in production and the first to be equipped with radar. Its wings, tail surfaces, landing gear, engines and many accessories are interchangeable with the B-50s—thus reducing maintenance and spares problems as well as simplifying personnel training.

Now in use by the Military Air Transport Service, the C-97 combines speed, long range and heavy load capacity—plus all the dependability inherent in Boeing-designed, Boeing-built airplanes.

HOOK AND HOIST! Self-contained 5,000-pound capacity hoist and overhead rail facilitate positioning of heavy cargo in cavernous main cabin.

ALL ABOARD! Two platoons of soldiers line up with flight crew before boarding Stratofreighter with howitzers and jeep. America's only fully pressurized military transport, the Stratofreighter can carry 134 combat-equipped troops faster and at higher altitude than any other plane.

ONE LOAD! The Stratofreighter, with volume equal to two railroad boxcars, carries all this overseas freight with ease. Lower deck loading through cargo doors at truck-bed level simultaneous with main deck loading, cuts ground time to a minimum.

TRUCKS FLY, TOO! Stratofreighter swallows up big 10-wheel trucks, even carries tanks, heavy guns—up to 26½ tons of freight!

Built by Boeing for the U. S. Air Force are the new C-97 Stratofreighters, B-50 Superfortresses and B-47 Stratojet bombers; for the U. S. Army, L-15 Scout liaison planes; and for five of the world's leading airlines, fleets of the new twin-deck Stratocruisers.

BOEING
STRATOFREIGHTER

News in Brief

Convair Turboliner: First flight of the Convair Turboliner will come in June, according to La Motte T. Cohu, president and general manager of Consolidated Vultee Aircraft Corp. The Turboliner, which is Allison's Convair transport equipped with two T-38 turbo-prop engines in place of Pratt & Whitney R-2800's, is cited by Cohn as "the means of continued leadership in the transport field" for the U. S. He indicated that the plane will have ample fuel reserves to meet requirements of the engine, including CAA allowances for stacking--"performance which pure jet transports will be unable to match."

Atlantic Jet Flight: the Canadian Avro C-102 Jetliner is scheduled to make its first trans-Atlantic flight in September, when it will fly to England for participation in the annual show of the Society of British Aircraft Constructors. After the show, the C-102 will be placed in freight service with Trans-Australia Airlines to compile in-service flight data.

1949 Profit: American Airlines, which had a $2,893,671 net loss in 1948, has reported a profit of $6,511,237 for last year after Federal income taxes of $1,800,000. A carry-forward credit reduced the 1949 tax bill by $950,000. Total revenues went up 15% to $103,000,000, while expenses were held to a less than 5% increase.

Young Rejoins PAA: Clarence M. Young has resigned as general manager of the Los Angeles Department of Airports effective March 1 to become a vice president-Pacific-Alaska Division of Pan American World Airways. Harold E. Gray, who is also vice president-Pacific-Alaska Division of Pan American, will concentrate on operating problems, with Young handling non-operating matters and public relations. Young, a former member of the Civil Aeronautics Board, had been manager of Pan Am's Pacific Division in San Francisco from 1934 to 1945. He took over the Los Angeles airport post two and a half years ago.

Legislative Scoreboard: **Airports:** President Truman has signed S. 1282, permitting the Civil Aeronautics Administrator to grant funds up to $50,000 for minor improvements at Class IV and larger airports without specific approval of Congress. This gives the Administrator leeway where an emergency requires prompt action.

A new public airport in the Washington metropolitan area is provided for in S. 456, sponsored by Sen. Edwin Johnson (D., Colo.) and reported favorable by the Senate Interstate and Foreign Commerce Committee. CAA estimates the new airport will cost approximately $14,000,000. It was pointed out that total cost of Washington National Airport to date, including funds spent and funds appropriated but not yet spent, amounts to $25,563,691. A companion bill (H. R. 7241) has been introduced in the House by Rep. Oren Harris (D., Ark.) and referred to the Interstate and Foreign Commerce Committee.

Lightplane Development: A bill, S. 2894, authorizing Federal funds for development of personal and industrial aircraft was introduced in the Senate by Sen. Edwin Johnson. The measure would authorize expenditure of $5,000,000 over period of three years to stimulate the design and prototype production of utility lightplanes adaptable for military service.

RFC Investigation: The Senate has voted $50,000 to enable its Banking and Currency Committee to investigate the lending policies of the RFC. The resolution authorizing the investigation was sponsored by Sen. J. William Fulbright (D., Ark.), who was highly critical of RFC for making a loan to Northwest Airlines for the purchase of Boeing Stratocruisers.

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Blueprint for *Air Transportability*

THE NEW Fairchild Packet exemplifies the continuous teamwork between the U. S. Air Forces, Air Materiel Command and the aircraft industry. As always, Air Materiel Command aeronautical experts worked closely with Fairchild designers and engineers to develop the Packet—now setting new military standards for efficient movement of cargo and personnel.

Air Force requirements called for a practical cargo and personnel carrier, versatile enough in design and operation to make it efficient for a variety of missions. The C-119, expertly tailored to fit these requirements . . . carries cargo and personnel, tanks, guns and vehicles, ammunition, rations, fuel and countless other bulk items. The Packet is also ideally suited to drop paratroopers and evacuate wounded.

An advanced version of the famed Fairchild C-82, the new, larger and faster C-119 is the result of imagination and engineering skill and production ability.

The Air Force and Navy will use these aircraft for numerous transport assignments. C-119's will play a vital role in the ever-expanding field of military air operations. Here is another Fairchild "first" in air transportability!

ENGINE AND AIRPLANE CORPORATION
FAIRCHILD *Aircraft Division*
HAGERSTOWN, MARYLAND

EDITORIAL

(CONTINUED FROM PAGE 1)

been obvious for some time. We should not get rushed into a disastrous competitive race for superiority with the British, because airway traffic control and other features of air transport are far from being ready for commercial jet within this country, but we can't afford to wait too long.

President Truman's flat rejection of the Air Force bid to undertake transport prototype development may be advantageous to civil aviation in the long run. It seems logical for the CAA to be the focal point. We hope the Bureau of Budget puts its stamp of approval on the program which the Air Coordinating Committee now has in the making.

Southern Pacific Humor

OUT OF THE office of C. E. Peterson, vice president of system passenger traffic of the Southern Pacific Railroad, San Francisco, has come one of the cleverest little booklets we've ever seen. Entitled "Why Don't Trains Fly?", it takes a series of humorous pokes and sideswipes at the airlines. The undertone is serious, of course, but the over-all effect is one for chuckles.

It seems that the Southern Pacific is "fed up" with certain types of airline advertising, especially the copy that is competitive and which, Mr. Peterson says, is often exaggerated and sometimes inaccurate. He believes that it is unethical to refer to a competitor's wares.

We don't go all the way down the road with Mr. Peterson and the Southern Pacific, but we do go so far as to compliment them on a clever and amusing retort in the form of this booklet, and we do believe that some airlines have gone to unnecessary extremes in hawking their wares. The competitive aspects can be over-done. Some cost comparisons we've seen recently have been a little too one-sided. Air transportation has enough in its favor without over-selling.

But of Mr. Peterson we would ask, how about the series of vicious and misleading articles on alleged "airline subsidies" appearing in railroad magazines from coast to coast? The railroads are poisoning the minds of their employes with grossly unfair propaganda attacking the nation's air transport system with shocking disregard of the facts. Is this ethical, fair and necessary?

Airport Planning

NOTHING has demonstrated quite so effectively the lack of coordination in airport planning on the Federal level as the CAB's designation of scores of towns without airports to be served by feeder airlines holding temporary certificates.

On the other hand, the CAA airport division has often approved the allocation of Federal funds for construction of paved runways for airports not being served by airlines and without any reasonable expectation of being served by them.

William L. Anderson, executive director of the Pennsylvania Aeronautics Commission, pointed out this ludicrous situation to the CAA's Airports Advisory Committee at its quarterly meeting in Los Angeles recently. He called for coordination of airport planning among state and federal agencies.

What Bill Anderson pointed out was nothing new, but it seems to us that he was speaking to the one group in the nation that might be able to do something about the problem. The Airports Advisory Committee is an organization of great potential importance and influence, thanks to the CAA for creating it, and Mr. Anderson's plea is in effect a challenge to the Committee to speak its piece.

Every community should have an airport, but not every community can justify an airport suitable for transport aircraft. Scores of medium-sized towns have been confused as a result of the CAB feeder policy. With great fanfare, the CAB announces that Center City is now on the airline map. But Center City has no airport or perhaps its airfield is suitable only for Cubs. But the airline certification is for three years and there isn't the slightest guarantee that the CAB will continue feeder authorization beyond that date. No magician could solve that one.

We hope that the Airports Advisory Committee will come up with some concrete recommendations which will bring states and the various Federal agencies into closer relationship, especially the CAB. Meantime we are pleased to note that the Committee is engaged in a study to bring forth an equitable airport charge formula. This isn't an easy task but any improvement over the present chaotic system of charges will be welcome progress.

The Plane-Less CAB

WHEN CAB Chairman Joseph J. O'Connell, Jr., was in Los Angeles recently he planned to fly to San Francisco with a scheduled airline. While visiting CAB headquarters in Santa Monica he was invited to make the trip in a CAB plane. When he asked what plane CAB had out there, he was told it was a 12-year-old single-engined Beech biplane. "What's good enough for our staff is good enough for me," he said, and cancelled his airline flight to go in the CAB plane.

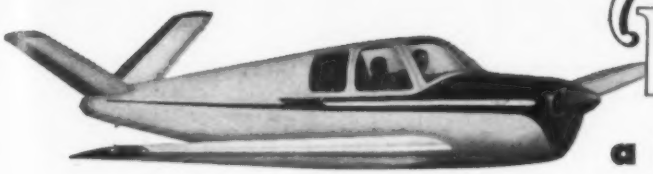
Congress stripped the CAB of much of its operating funds for this year with the result that the very agency which regulates the airlines has had to put its DC-3 and its twin-engined Beech in storage. Currently it is operating seven single-engined airplanes, all more than 10 years old. Meanwhile many other government agencies with far less need for up-to-date air transport are flying their own transport airplanes. The agency most directly concerned with the airlines must do without.

Reliability Progress

UNITED AIR LINES reports that it completed a record 98% of all scheduled miles in 1949, with 92.5% of flights originating on time or within 15 minutes of schedule and almost 75% arriving at final destinations within the same time limits. Year by year the airline record gets better. If United's record is typical of the industry, real progress is being made.

WAYNE W. PARRISH

Features like these make this NEW



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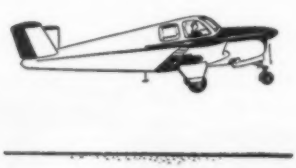
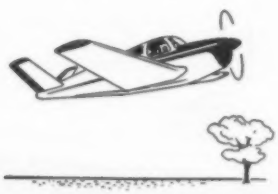
a better buy than ever!

New Beechcraft propeller

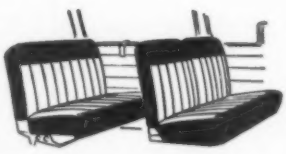


Increased take-off horsepower

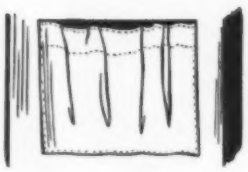


Faster-action landing gear

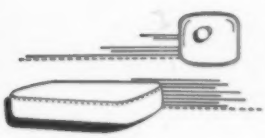
Increased, faster flap travel



New upholstery combinations

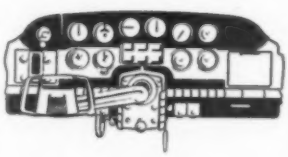


Three new map pockets

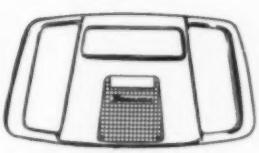


Four new arm rests

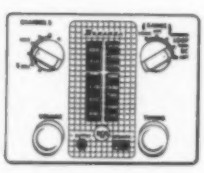
New exterior paint design



New instrument panel design



Safety-type control wheel



New radio with VHF channels

Access door for oil tank

It has no equal in performance, speed, economy, strength, safety, style and comfort!

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American Aviation

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NWA's Experience Proves 2-0-2:

Eastern and TWA Expected To Order 65 Martin 4-0-4's

By William D. Perreault

Eastern Air Lines and TWA are expected to place orders for a total of 65 Martin 4-0-4's within the next few weeks providing final contract details can be worked out. Both airlines have had sizeable groups of engineering and operations personnel at the Martin plant in recent weeks ironing out the details of the plan which will see these two major lines receiving planes of almost identical design.

With everything from cockpit layout to galley location standardized, only one major difference appears to split the two lines. Eastern is interested in a one-piece wing, tip to tip, while TWA favors the original design with wing panels bolted to the fixed centersection. EAL engineers explained that the single-piece wing should be easier to maintain with wing pulls and needless inspections eliminated.

Under the plans currently being discussed, TWA would get 30 of the new Martin 4-0-4's and while awaiting delivery of these models would accept 12 Martin 2-0-2's within about four months of signing the contract. The latter ships would be assembled from fuselages and wings already manufactured and in storage since the completion of the Northwest Airlines 2-0-2 order.

Estimates are that the first ships off the 4-0-4 line would be delivered in 16 to 18 months but in the meantime TWA would be able to train crews, conduct route familiarization and carry on other projects using the 2-0-2's. Upon delivery of the new models TWA would resell the 2-0-2's.

More Orders Likely

While the order for 65 4-0-4's would represent well over $20 million, it would appear that this is just a start. Eastern is now operating 50 Douglas DC-3's and TWA has about 65 DC-3's in domestic service. Although the new transports will produce more seat miles than an equivalent number of the Douglas transports, some portion of the remaining 50 ships will also be up for replacement as time goes along.

What has brought about the renewed interest in the Martin transport? Some industry groups claim that Martin is offering the improved version of the 2-0-2 at an unusually low price in order to re-enter the commercial market. With its military aircraft orders about complete and no immediate signs of new contracts, Martin is left primarily with rocket development work. It is possible that this is an attempt to get substantial production underway to keep the factory and facilities together awaiting further developments.

More likely the operating record of the Northwest Airlines Martin 2-0-2's is the major influencing factor. Since NWA initiated its first scheduled flight with 2-0-2's on November 15, 1947, the ship has proved itself an ideal replacement for the DC-3's. It carries a good passenger load (36), has a short take-off distance (3,750 feet), and an unparalleled rate of climb for a twin-engine transport.

Parallel Tests

Northwest has proved the airplane is a better ship operationally than is indicated on paper. Apparently Martin did not certificate the airplane for maximum performance. However, sometime this month Martin is expected to start re-certification of the Martin 2-0-2 at higher gross weights and possibly higher cruising speed.

Meanwhile EAL and TWA have conducted side-by-side tests of the Martin 2-0-2 and the Convair Liner. The results were surprising. According to information from reliable sources, the Martin took off and landed in shorter distances than the Convair. Its single- and two-engine climb performance was better and cruising at 5,000 feet altitude it was about 5 mph faster. At 15,000 feet altitude the Convair was about 5-6 mph faster than the Martin.

The Martin 2-0-2's has had its troubles. There was the structural wing failure which resulted in one fatal accident and brought about re-design of the wing spars. But both Martin and Northwest stood behind the airplanes. Even while a temporary fix was in use, NWA's pilots

More Coming?—This is one of the Northwest Airlines-operated Martin 2-0-2's. Only 24 of the ships are in commercial service in the U. S., all by NWA, but indications are that TWA and Eastern will purchase a total of 65 of the slightly larger sister-ship, the Martin 4-0-4. The 4-0-4 is distinguished by a fuselage about 5 feet longer than in this model, 340 additional gallons fuel, nacelles which tilt upward about 1½ degrees and a gross weight of 43,000 pounds.

had sufficient faith in the ship to fly it through turbulent winter weather.

Meanwhile Martin worked out details of an improved spar design, set aside the capital necessary to finance the wing rework (estimated at $8 million) and then arranged with NWA to route the ships through the factory during 1949 for the new spar and certain other basic changes to improve passenger service.

Northwest deserves much credit for the public acceptance the 2-0-2 has gained. When originally delivered, the forward loading door of the airplane was of poor design. Several were lost in flight prior to an extensive rework using a parallelogram-type arrangement designed in NWA's engineering and maintenance shops. A hydraulically-operated step between the integral loading ramp step and the ground level was eliminated.

The nose wheel torque links were redesigned to eliminate steering difficulties. As delivered the propellers had very little ground clearance, about 9 inches. NWA worked out a change in the landing gear which resulted in two-to-three inches more propeller clearance and brought about a sharp reduction in earlier propeller damage with resultant lowering of maintenance costs.

Cut Station Time

The seating arrangement was changed to allow for carry-on baggage racks in the rear of the cabin and soon station stops were being scheduled for five-minute intervals. Maintenance costs were high, reflecting special inspections that had to be made of the wing structure, and then all during 1949 schedules were hampered while the ships went through Martin's rework. As many as seven aircraft were at the Martin plant at one time and older equipment, scheduled for retirement, had to be kept in operation to meet schedules.

Gradually the ships were returned to service and new records were established. It was September, 1949, two years and two months from the start of service, before the entire fleet was in use. Yet in these two years NWA's 2-0-2's had flown 12,275,635 revenue miles and 223,255,000 revenue passenger miles. Revenue ton-miles totaled 24,-112,747.

Design characteristics of the airplane such as the underwing fueling provisions, coupled with NWA's improved maintenance program, brought about lower operating costs. Direct cost of operating the 2-0-2, per available ton-mile, has run about 14.85c compared with 18.83c for the Douglas DC-3. Direct cost per available seat-mile is about 1.782c for the Martin and 2.28c for the DC-3.

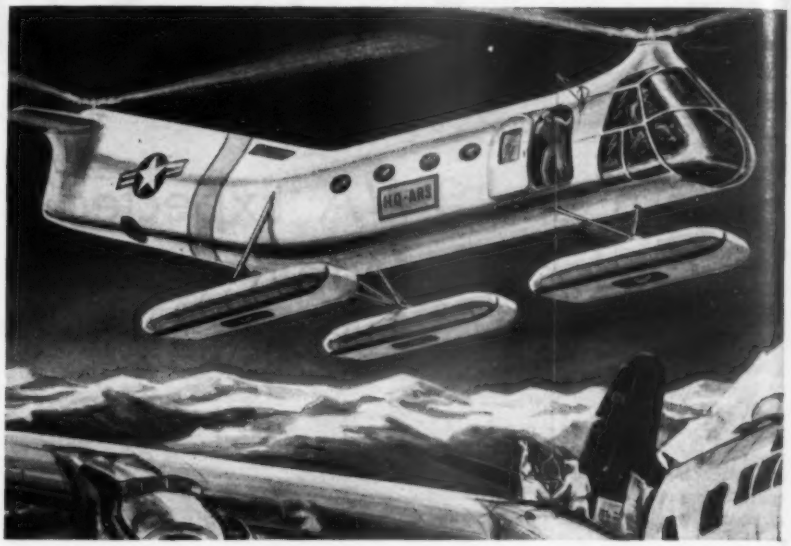
Looks for Improvement

Costs per plane-mile for the 2-0-2 is higher than that of the DC-3, 60.42 compared with 44.63c, but the average seats available per revenue mile were listed as 33.9 for the Martin and 19.6 for the DC-3. With the entire fleet in operation and scheduling being arranged to insure high daily aircraft utilization, NWA looks forward to major improvements in this record during 1950.

No small part in placing the Martin 2-0-2 in a better position to earn money for the airlines will be the recertification program. If this is carried through successfully NWA will benefit almost immediately with an increase in gross take-off weight from 39,900 pounds to 43,000 pounds, a 3,100 lb. improvement.

Other changes which will be incorporated as part of the Martin 4-0-4 design for greater utility and profits will be cabin and cockpit pressurization, 340 additional gallons fuel capacity bringing the total to 1,350 gallons, about five additional feet fuselage length to provide for 40 or possibly 44 seats, and the Pratt & Whitney R-2800 CB-16 engine to provide 2,400 horsepower at takeoff. Some improvement in performance might also result from the additional 1½ degrees tilt proposed for the engine nacelles.

Piasecki Wins AF Helicopter Contract



This is an artist's conception of the winning entry in the Air Force's Arctic rescue helicopter evaluation, one of the most important helicopter competitions ever staged. The plane is the Piasecki H-21, an advanced version of Piasecki's HRP-2 all-metal transport helicopter now going into Navy service. It was adjudged the best of six entries, including the Sikorsky H-19, a 10-passenger plane; the Bell XH-12; a modified version of McDonnell Aircraft Corp.'s XHJD-1 two-rotor transport helicopter; the Kellett XH-10, a twin-intermeshing-rotor 10-passenger helicopter; and a convertoplane, Gyrodyne Corp.'s Model 7 Helidyne, which has rotors for vertical flight and props for forward flight.

The contract, which will call for a production order worth in the neighborhood of $10,000,000 (about 25 planes), clearly establishes Piasecki as the nation's No. 1 military rotary-wing manufacturer, from a production standpoint, and places the company in a commanding position with regard to commercial orders, since its production costs for the PD-22C, the commercial transport helicopter, will be largely taken care of in the military contract. Thus, Piasecki will be able to offer commercial helicopters seating up to 21 passengers at prices that its opposition, forced to defray their own tooling costs, will find hard to match.

The H-21 has basically the same configuration as the Navy HRP-2. Instead of the HRP-2's Pratt & Whitney R-1340 engine, however, the H-21 will have a more powerful Wright R-1820. The H-21 will also feature what Piasecki calls "omniphibious" landing gear, that is, wheels, skis and floats all built into one compact unit, permitting the plane to land on any type surface without changing gear. Other features of the H-21 include an external hydraulic hoist for rescue operations, better pilot visibility, a complete power plant package removable as a unit and numerous access panels.

Mid-Continent Buys Four PAA Convairs

Mid-Continent Airlines has announced the purchase of four Convair Liners and related equipment from Pan American Airways at a total cost of over $2 million. The planes, which had been declared surplus by PAA, are scheduled for delivery to MCA starting March 17 and will be introduced into service on their express routes starting June 1. Final details of the arrangement were worked out by MCA president J. M. Miller meeting with PAA officials.

Pan American's decision to declare the equipment surplus has been attributed to the public resistance to twin-engine equipment on some of the longer PAA overwater routes in the Caribbean. Industry sources say the planes are being replaced in service my DC-4's.

Cites 'Give-Away' Mileage:

Board Proposal Would Drop Common Fare Structure

By William V. Henzey

A complete over-haul of the domestic passenger fare structure became a possibility last week when CAB Chairman Joseph J. O'Connell, Jr., circulated a proposal to the airlines suggesting immediate remedies for the "more aggravated fare situations" which are costing the lines estimated millions of dollars annually.

The proposal, however, may not be recognizable when requested comments of the airlines are submitted and subsequent adjustments made. The task is momentous and the problems peculiar to air transportation, with very little precedence available. Advocates of a remodeled structure say it is inevitable because of the widening gap between the actual miles flown and the point-to-point miles for which the lines are certificated.

O'Connell's initial action, though major in scope, does not contemplate a re-construction of all domestic fares at this time, but it does serve to put all on notice that CAB is going ahead with a full-scale study of the fare structure, and where corrective action can be taken in the interim—it will be taken.

Right now the point of most serious concern is the common-fare set-up between Chicago and major points east, on the one hand, and the west coast cities from Seattle to San Diego. Currently, the fare between Chicago and all major west coast cities is the same—$113.75. This is the basic fare which is used for constructing transcontinental fares to and from New York, Boston, Detroit, and other major points east of Chicago.

Big Revenue Loss

CAB studies show its existence to most west coast cities is depriving transcontinental carriers of over a million dollars annually because many passengers are receiving hundreds of miles of "give-away" transportation (see graph) for which the lines should be compensated in passenger revenue.

To alleviate the situation, CAB wants all fares constructed on a straight mileage basis, preferably at 6c per mile. If adopted by the lines, only a few transcontinental fares would be unaffected, notably those to and from Los Angeles, which reflect the shortest mileage.

The Chicago-San Francisco fare, for example, would be increased from $113.75 to $124.38. Similarly, the Chicago-Seattle fare would go up to $126.12, and the Chicago-Portland fare to $117.12. These increases would, of course, be reflected in fares between the west coast and most points east of Chicago.

It does not suffice to say that this is the solution to the problem, nor that it is what will inevitably be adopted. It represents the Board's initial suggestion and must over-rule some rate-making theories which date back to the early days of common carrier activities.

Sharp Opposition

It must withstand almost certain protests of several airlines which rely on the common-fare principle to remain competitive with carriers which fly less-circuitous routing between the same points. It must withstand protests of lines which rely on the principle to offset inherent route deficiencies. That the Board, of course, is empowered by the Civil Aeronautics Act to prescribe rates and fares is a well-known fact, but that it will exercise such power in this particular situation is extremely doubtful.

Mr. O'Connell suggested that the carriers submit comments on the proposal by March 1, and indicated that a conference between the Board's staff and the carriers may be arranged for the purpose of further discussion or disposition of the matter.

Among the route peculiarities that must be contended with if the common-fare principle is to be dissolved is that between Los Angeles and San Francisco where carriers are certificated to serve one through the other on some flights, and vice versa on others.

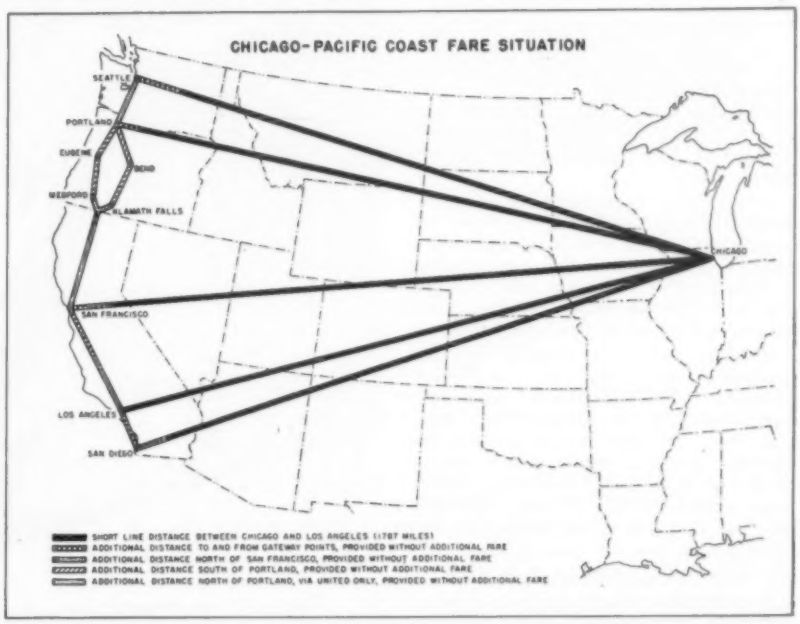
Indirect Routings

With equalized fares, a Los Angeles passenger may be carried direct from Chicago or on flights routed via San Francisco without violation of any fare principles. If, however, the San Francisco fare is increased over that to Los Angeles, the same passenger may be carried only on direct flights, or otherwise he would pay less for a Los Angeles flight routed through San Francisco, than the passenger who traveled only as far as the latter point, a discriminatory violation.

This same situation can be projected to countless other common-fare cases throughout the country and presents a formidable obstacle which must be hurdled if the Board's remedy is to be applied.

CAB's point, however, is that the characteristics of the present fare structure follow the concepts applied in the construction of fares in surface transportation, which it feels may no longer be well adapted to air transportation in view of the large and still increasing number of nonstop routings which constant improvement in aircraft and flight techniques are making possible.

It is hardly disputable that this reasoning is sound and serves basically as a good argument for abolishment of the common-fare practice, but it runs contrary to a second-type of corrective action which CAB proposed in its circular to the lines—that of eliminating


CHICAGO-PACIFIC COAST FARE SITUATION
SEATTLE
PORTLAND
EUGENE
MEDFORD
KLAMATH FALLS
SAN FRANCISCO
LOS ANGELES
SAN DIEGO
CHICAGO
SHORT LINE DISTANCE BETWEEN CHICAGO AND LOS ANGELES (1787 MILES)
ADDITIONAL DISTANCE TO AND FROM GATEWAY POINTS, PROVIDED WITHOUT ADDITIONAL FARE
ADDITIONAL DISTANCE NORTH OF SAN FRANCISCO, PROVIDED WITHOUT ADDITIONAL FARE
ADDITIONAL DISTANCE SOUTH OF PORTLAND, PROVIDED WITHOUT ADDITIONAL FARE
ADDITIONAL DISTANCE NORTH OF PORTLAND, VIA UNITED ONLY, PROVIDED WITHOUT ADDITIONAL FARE

THIS CHART illustrates the amount of "free travel" being provided between Chicago and the west coast, a situation resulting from common fares to all west coast cities which are equal to the short-line mileage fare between Chicago and Los Angeles. By charging 6c per mile for each mile not now being compensated for, CAB estimates carriers between the above points would realize $494,707 additional annual revenue.

competitive fares over circuitous routings when the circuity exceeds 20%.

Circuity Limitation

This has reference to carrier "A," for example, meeting the fare of carrier "B" despite the fact carrier "A's" point-to-point mileage between the points is substantially longer than that of carrier "B". At first glance it seems, and in certain cases it is, a well-taken point.

In many instances today, the Board's study shows that the amount of route circuity ignored in establishing competitive fares is as high as 58%, with over 500 miles of "give-away" transportation provided. However, though this is true when point-to-point mileages are considered, the advent of larger equipment capable of more and more nonstop flights weakens the reliability of fares constructed on the point-to-point basis.

If a carrier is forced to cancel a competitive fare because his route mileage between a particular pair of points exceeds by 20% that of his competitor, he may be unjustly discriminated against if he is operating certain flights on a nonstop or a combination nonstop and point-to-point basis, the mileage for which falls within the 20% limit.

If allowances are to be made in such cases, it would result in a flexible fare structure based on the scheduling of aircraft—considered a most unstable basis at this developmental stage. CAB's proposal would, of course, work as protection for the short-haul carrier, but that too becomes complicated where one or more carriers operate non-stop between the same points, Chicago-New York, for example, despite distinct variances in point-to-point route miles.

The third and last point of the Board's initial program would be for the lines to provide that when stopovers are made, the fare for the total journey be computed by combining the individual fares between the points.

Currently, on most through fares a passenger may stop over at an intermediate point for any length of time within the time-limits of his through ticket, and the resume his journey with no increase in fare involved. Under the Board's proposal, if the combination of fares from origin to stopover point and stopover point to destination exceeded the through fare, which it does in many cases, the passenger would pay the higher fare.

AAAE Convention to Hold Airline-Airport Forum

Columbus, Ohio, will be host to what may be the largest turnout of airport people ever assembled when the American Association of Airport Executives opens its annual convention April 16.

Don W. Martin, of Wilmington, Del., will preside over the five-day meeting, which will feature an open forum on airlines-airports problems and another on the operation of military craft at civil airports and on civil airways.

Travel Division Shifted

Activities formerly carried on by the U. S. Travel Division of the Department of Interior have now been shifted to the Travel Branch of the Department of Commerce, concentrating government interest in travel under one agency.

The move is a part of the Commerce Department's program of setting up a domestic travel program alongside its international travel promotion. Robert H. Wall, formerly assistant chief of Interior's Travel Division, is now assistant to Dr. Herbert A. Wilkinson, director of Commerce's Travel Branch.

New Russian High-Performance Jet Fighter

This is a new Russian fighter with performance in the same class as the USAF's North American F-86 Sabre. It has been placed in operational service with units of the Red Air Force based around Moscow. The above drawing was based on blown-up telephoto film smuggled out of Poland to a British source.

The plane has not been accurately identified, but it is believed to be a Yak-21, designed by A. S. Yakovlev, one of the Soviet Union's youngest and best aircraft designers. (Other sources think it might be a late-model Lavochkin design).

Power plant is probably an advanced model of the Rolls-Royce Nene jet engine, quantities of which the British sold to Russia some time ago. Thrust is estimated at well over 5,000 pounds, top speed at 690 miles per hour and service ceiling more than 45,000 feet.

Russian policy of keeping internal equipment and armor to a minimum, combined with reasonable span and aspect ratio, giving a lower wing loading than American types, makes the Russian plane a highly maneuverable challenge to bomber penetration. Armament consists of four 20-mm cannon in the lower portion of the nose; an alternate design has the cannon located at the wing leading edge-fuselage joint.

The appearance of such a modern fighter in operational service tends to controvert an impression held by many American observers: that Russian equipment is largely inferior to our own and that its scientists, technicians and designers are not equal to those of this country. The Russians have deliberately fostered this impression by equipping units based in Germany or other areas where they might be in close contact with Western powers with piston-engine aircraft of World War II vintage. European intelligence circles, however, no longer hold the "inferior" impression.

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Pilot Techniques for the Jet Transport

By Richard G. Worcester

The skill of a pilot can be summed up by saying that at all times life and limb depend upon mastery of his environment. But the high speed and short endurance of turbine transports has so altered the environment that transition—especially for older pilots—is going to be no light undertaking.

Thus operational techniques will call for considerable re-orientation of ideas on the part of the pilot, particularly at high altitude when planning the concluding phases of a flight.

Greater nicety of touch and on the whole more airmanship will be needed. These more exacting requirements for the pilot are, however, to some extent offset by simplified engine handling and by the quieter atmosphere in the cabin which tends to promote a higher level of individual mental efficiency.

It is possible that the views given here err on the pessimistic side because they are based upon personal experience of one pure jet transport and three propeller-turbine transports which may not necessarily be representative of aircraft likely to enter scheduled service.

One leading authority after another has publicly warned that all obvious lines of research into fuel economy have been explored and future reduction in consumption can be only fractional following minor refinements. So the greater tinge of anxiety while flying a turbine transport is to my mind inevitable, and will remain by far the most difficult psychological problem that has ever faced the airline pilot.

Prop-Jet Transports

Owing to the high rotational speed necessary to start and sustain combustion on the ground with a propeller-turbine transport, operations have to be carried out with the propeller blades in the minimum drag position of zero, or near-zero, pitch.

Nearly all the handling problems in flight arise from the need to prevent the blades from running off into this position following a constant speed unit failure. If the blades in a multi-engine transport move to a pitch less than 15 or 20 degrees, the asymmetric drag will quickly overcome the pilot's lateral control and invert the aircraft.

There are various ways of preventing this: the usual method is to use a withdrawable pitch stop at say, 20 degrees which must be disengaged when starting or moving on the ground. The British use flight pitch stops which automatically engage when the weight of the aircraft lifts off the main wheels. However, I found that it is safer to engage the stops manually as soon as the throttles are fully open at the start of the take-off run when operating from small airfields.

When Jets Come

When jet transports appear on the U. S. scene, they will introduce techniques of flying radically different in many ways from present day piloting.

A preview of what the present airline pilot may expect when he shifts from piston to turbine-powered craft is given here by Richard G. Worcester, former technical editor of the British weekly journal, The Aeroplane, *who has just joined the editorial staff of* American Aviation Publications.

Worcester's piloting experience includes some of Britain's latest jet airplanes, including the turbo-prop Vickers Viscount transport.

In the air between the flight idling position and full trottle the Mamba, for instance, can be whipped open without a falter. Some fast feathering speeds are possible by simply pulling off the high pressure cock. The best time noted was 2 seconds using the feathering button, or 5 seconds without, and in another machine the time of 9 seconds was considered too long.

Unfeathering still presents slight mechanical difficulties. In due course it should be possible merely to press the unfeathering button, but a method of energizing the pitch to start the blades is sometimes necessary at present.

There is no reason why closing the throttles should not cause the blades to go into low pitch, provided the flight pitch stop will prevent the blades going too far and into the starting pitch range. It is better to keep turbine handling the same as a piston engine unless there is a good reason to change it.

During the final approach to land the flight pitch stops normally remain engaged until the wheels touch. The ideal time to disengage is, I think, when flattening out. If the stops are disengaged before this, a constant speed unit failure could force the aircraft down before reaching the runway. If disengaging is delayed until later jet pipe temperatures are apt to rise.

First of the New— Capt. Richard Rymer, 31-year-old veteran pilot of British European Airways, is said by BEA to be the first airline pilot in the world officially qualified to fly passengers in prop-jet transports. The qualification is in the form of a special endorsement of his commercial pilot's license for gas turbine-engined transports. Capt. Rymer has been sharing with Capt. Summers, Vickers chief test pilot, in handling trials of the Vickers Viscount, which is expected to be the first prop-jet airliner to go into regular scheduled service.

Pure Jet Transport

Naturally pitch stop operations are eliminated in the jet transport and there is only one over-riding problem in this type of aircraft: the fuel consumption.

Unless taxi time can be reduced to three minutes, it might be preferable to tow jet transports to the downwind end of the runway. Or perhaps they could taxi out on one engine and have aircrews start the three others immediately before take-off. These jet engines start very easily and it is all automatic. Pilots will have to use every artifice to reduce the fuel actually consumed. The full throttle jet pipe temperature check should be cut to a second before releasing the brakes.

At altitude comes the time of greatest judgment. More depends upon the decisions of the pilot and he has a shorter time in which to make them. If approaching his destination he is advised to seek a diversion, he will have to choose one knowing that a second diversion may not always be possible. Thus the information radioed from the airports must be more accurate. Luckily it is easier to pass more accurate forecasts to a jet transport because the greater speed means that the forecast can cover a shorter period.

One way to descend is to shut down three engines and descend with one engine at cruising power. If it is known that a period of waiting is going to be inevitable, the descent from 40,000 feet to 20,000 feet can, it is true, be made very gradually on one engine but probably two engines will have to be the minimum in order to provide duplication

Feeder Transport—Photograph of the de Havilland Heron, 14 to 17-seat transport, shows the prototype on the assembly line. Aircraft will be powered by four DH Gipsy Queen 30 unsupercharged ungeared engines driving non-feathering propellers. It has a fixed nose-wheel type undercarriage and will sell for $98,000 plus cost of the radio. Maximum fuel capacity is 300 Imperial gallons and gross weight is 12,500 lbs. Designed for economical operation, the prototype is expected to fly by summer.

of cabin air supply. Unlike the prop-jet aircraft there is no obvious external manifestation when engines are shut down which should eliminate undesirable passenger-concern. The minimum stacking level in practice is 20,000 feet.

The one thing to avoid is full throttle circuits of the airfield. At sea level the consumption of a four-jet transport may be anything up to 4,000 gallons per hour. As soon as the main wheels touch three engines should be shut down. The landing run and taxi back should be done on one of the inboard engines. Thus the tangential runway airport arrangement is ideal for turbine aircraft. Failing that a special apron at each end of the prevailing wind runway would be an advantage.

Although the noise intensity of a turbine is hardly lower than that of a piston engine, the frequency is higher and so one "hears" much less. On the ground there is a faint and distant singing from the rotors. At the aft end of the fuselage near the tailplane, the noise is pitched lower and rises closer to the value and pitch of a piston engine.

In prop-jet aircraft rotor noises are drowned by propeller swish. Absence of hammering from the reciprocating action is not only noticeable from a maintenance standpoint but introduces a radically different level of comfort. Once passengers have experienced this for themselves, the view is widely held that they will not wish to revert to transport with the older pattern of propulsion.

Federal Court Confirms Luscombe Reorganization

A reorganization plan for Luscombe Airplane Corp., presented by Texas Engineering and Manufacturing Co., has received Federal court confirmation and has been approved by two-thirds of Luscombe's creditors. The plan is to be completed by March 31.

Under the proposal, Temco will form a holding company which will acquire about 85% of the Luscombe stock from L. H. P. Klotz, former president. The holding company will also issue $10,000 worth of common stock, to be owned by Temco. Luscombe's minority stockholders will be offered nine cents a share for their stock. Temco will then lend Luscombe $500,000 to pay creditors' claims, unpaid wages, court costs, and other financial obligations.

Southwest Lowest-Cost Feederline On Ton-Mile Service Basis

A comparison of revenues and expenses of the certificated feeder air carriers for the first nine months of 1949, as compiled from reports on file with the Civil Aeronautics Board, shows wide fluctuations in both categories, and particularly with regard to operating expenses.

Southwest Airways showed itself to be the lowest-cost operator in terms of operating expense per revenue ton mile, Empire, Pioneer and Piedmont being other low-cost operators on the same basis. Highest cost operator was Southern Airways, but its figures reflected only 10 weeks' experience and might not be indicative of its present costs. The CAB system of accounts compares all income and expense data in terms of cents per revenue ton mile, and an altogether different picture might be obtained in terms of cents per plane mile or cents per available ton mile operated.

The following tabulation tells the story:

Feederline Revenues & Expenses—1st 9 Months, 1949

(in cents per ton-mile)

Carrier	Pass. Rev.	U. S. Mail Rev.	Express Rev.	Freight Rev.	Total Oper. Rev.	Total Direct Exp.	Total Indir. Exp.	Total Oper. Exp.
All American	57.76	138.91	1.94	....	199.45	134.88	140.78	275.66
Challenger	46.00	102.00	0.10	0.20	151.00	79.00	65.00	144.00
Empire	42.35	89.62	0.53	....	134.15	65.05	55.40	120.45
Monarch	45.82	121.57	0.87	2.36	172.45	89.43	81.04	170.47
Piedmont	58.86	62.04	0.64	0.90	124.44	76.32	50.98	127.30
Pioneer	51.80	60.85	0.34	0.69	116.72	54.78	51.94	106.72
Robinson	78.47	85.55	....	1.34	166.21	106.54	97.36	203.90
Southern	51.46	245.08	3.00	....	299.76	226.86	194.46	421.32
Southwest	46.05	52.32	0.57	1.51	101.64	48.97	46.20	95.17
Trans-Texas	44.24	149.69	0.60	0.69	195.70	111.48	94.97	206.45
West Coast	64.61	82.55	0.72	....	149.00	69.08	75.60	144.68
Wisc. Central	56.34	201.23	1.64	....	261.37	133.96	123.14	257.10
Averages	53.65	115.95	0.91	0.64	172.66	99.70	89.74	189.43

WHAT'S DOING

We've just been reviewing some figures to see what happened at Pratt & Whitney Aircraft during 1949.

One thing that happened was that we continued to build and deliver substantial quantities of aircraft engines. During the year, we were in production on six basic sizes of piston engines for both military and commercial use. As you know, we also swung into production on our first jet engine, the Turbo-Wasp. All told, we shipped more than 2,400 engines in 1949.

There was a lot of work, a lot of planning, and a lot of headaches involved in this manufacturing accomplishment. On the piston engines, for example, quantity orders by our customers for various models of engines fluctuated abnormally during the year, requiring repeated revision of our production schedules. Then too, we made thousands of design improvements in these production models, requiring new tooling and changes in manufacturing methods. On the jet engines, of course, we were plagued by all the inevitable troubles involved in putting any completely new product into production. Despite the problems, we delivered almost 7,000,000 horsepower in engines, and the equivalent of 40% additional horsepower in spare parts.

But the physical production of engines wasn't the only thing that happened at Pratt & Whitney during 1949. In fact, there wouldn't have been *any* production if those engines hadn't possessed the superior performance characteristics and the dependability that brought orders from our customers. So, an intensive engineering program of research, design, development and test has always been the mainstay of our progress at Pratt & Whitney. Out of it has already come the improved performance of our current types of engines. And out of it will soon come still better Pratt & Whitney engines to meet the rapidly advancing requirements of both military and commercial operators.

at Pratt & Whitney Aircraft?

HOW MUCH ENGINEERING WORK DID WE DO LAST YEAR?

- ☐ 1 Million Man-Hours?
- ☐ 2 Million Man-Hours?
- ☐ 3 Million Man-Hours?
- ☐ ? Million Man-Hours?

Last year, Pratt & Whitney engineers put in a total of nearly 3,000,000 man-hours of work. That's equivalent to the full time of one man working 50 weeks a year for 1,500 years! Actually, of course, no one man could ever do the work if he lived a million years. The engineering problems are so complex and varied that our engineering staff consists of designers, draftsmen, mathematicians, metallurgists, physicists and countless other specialists, each contributing his technical knowledge and skill to the solution of some part of the problems. To all this time and effort must then be added more millions of man-hours by expert craftsmen, working directly for the engineering department to fabricate, assemble and test the experimental parts and engines required for new designs.

HOW MANY DESIGN CHANGES WERE MADE DURING THE YEAR?

- ☐ 3,831?
- ☐ 11,417?
- ☐ 19,000?
- ☐ 52,000?

The design of an aircraft engine is never finished until that engine becomes obsolete and goes out of production. It must be constantly refined and improved — either to provide better performance, or to reduce manufacturing time and cost, or to correct troubles encountered in actual service. Just as an example, we made 3,831 engineering changes on production models of Pratt & Whitney engines during 1949 — an average of 15 changes every working day. This involved changing more than 19,000 drawings. And these are only the changes that applied to production models of engines. Beyond this, the engineering department changed an additional 11,417 drawings applying to experimental engines. Add to these figures the 21,999 brand-new drawings and design layouts turned out for experimental engines, and you get a grand total of more than 52,000 drawings that were either made or changed during the year — an average of more than 1,000 every week.

HOW MUCH EXPERIMENTAL TESTING DID WE DO IN 1949?

- ☐ 10,000 Hours?
- ☐ 18,000 Hours?
- ☐ 52,000 Hours?
- ☐ 70,000 Hours?

Every time a new part is designed, we have to make sure it will function properly. Every time we change an existing part we have to find out if the change produces the desired improvement. And every time operating troubles develop in service, we have to find out the source of the trouble. This involves a continuous program of experimental testing both of individual parts and of completed engines. In addition to almost a thousand hours of flight testing, we carried out, last year, more than 70,000 hours of such experimental testing. This included more than 18,000 hours of testing of full-scale experimental engines and more than 50,000 hours of test-stand running of major components such as cylinders, burners, turbines and compressors.

PRATT & WHITNEY AIRCRAFT

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Airlines Determine Frequencies:

New Atlantic Mail Formula Ties Rates to Capacity

By Keith Saunders

New trans-Atlantic mail rates for the period after January 1, 1949, were announced in February by the Civil Aeronautics Board, and it was indicated that pressure was being brought on the airlines to keep closer control of their schedule frequencies and the capacities operated.

The Board's 79-page show cause order said the new rates were designed to "reverse the trend of increasing dependence on the government" and to "protect the public against continually mounting expenditures in support of uneconomic expansion."

In general, the new formula relates mail pay to capacity and seeks to limit mail pay support to such expansion in capacity as traffic potential may warrant, with some variations in formula for operations in the various general geographic areas served by American Overseas Airlines, Trans World Airline and the Atlantic Division of Pan American World Airways.

In order to provide management with the flexibility in deciding how many schedules to operate and what size equipment to use, the base service volume for each carrier was developed in terms of carrying capacity rather than trip frequencies, thus making the total mail pay support for a given volume of operations independent of the type and size of aircraft used.

Used Standard Airplane

To further this objective, the Board established the base volume for each carrier in terms of the operation of all services by all three carriers with a standard aircraft type, which means, the order pointed out, "that any benefits resulting from the selection by management of more economical aircraft than that adopted as a standard will redound to the carrier, whereas losses ascribable to the selection of less economical aircraft will be sustained by its stockholders."

Base volumes to be underwritten by mail pay were set at approximately 277,906,000 available seat miles for AOA, 454,140,000 for PAA and 387,556,000 for TWA. These volumes compared with 290,493,000, 498,239,000 and 462,869,000 seat miles performed by each of the three carriers during the calendar year 1948, computed upon the basis of standard average available seats of 37 for the DC-4, 41.5 for the Constellation and 17 for the DC-3 aircraft.

For the principal transoceanic routes of the three carriers, the new mail pay formula is designed to provide each with a fixed amount of mail pay per month equivalent to a uniform rate of 11c per available ton mile so long as the average passenger load factor does not exceed 70% on the base service volume recognized for rate making purposes, with volume in excess of that paid for at the additional rate of 1c per passenger mile.

Passenger Mile Incentive

The Board felt this formula should "provide incentive for maximizing passenger miles and minimizing capacity operated, which are the normal profit incentives of any private enterprise financially dependent upon its own resources."

The Board said a reasonable ceiling as to the volume upon which additional mail pay should be provided the carriers under its formula would be approximately 50% greater than a volume equivalent to a load factor of 70% on the base capacities recognized for the European and Near East areas.

Conversely, in order to restrict the mail rate to a reasonable level in the event of a substantial expansion of services, the formula also limits the mail pay to 3.75c per revenue passenger mile. Moreover, to assure a minimum rate of compensation for the actual mail carried, it is provided that the mail rate cannot be less than $1.00 per mail ton mile.

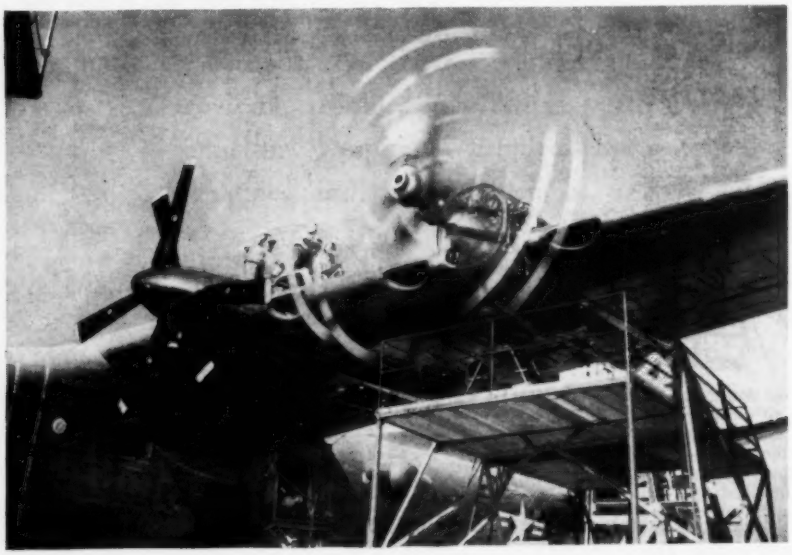
The formula is varied for services to other geographical areas because of differences in the traffic potentials and operating expenses of these services.

Annual Rate Averages

The approximate total annual mail compensation of the three carriers for operations of the recognized base volumes in all the geographic areas named in the order would be $4,089,000 for AOA, $9,426,000 for PAA and $6,734,000 for TWA. However, on the basis of traffic reported for the year ended last September 30, the new formula would give the carriers approximately $4,089,000, $10,032,000 and $7,332,000, respectively.

The Board said its purpose was "to provide each carrier with an adequate base from which it may profitably expand or contract its volume of operations as may be warranted by prevailing economic and business conditions. This necessarily and rightfully leaves with management the responsibility of appraising the services to be operated in terms of frequencies and size of equipment to the end that an economically balanced operation may be maintained."

It added a warning that "in the absence of unlimited underwriting by the government, this involves decisions which management must make and live by, even though it should result in financial distress."



First Run-up—This is a close-up view of the first installation of the Allison T-40 engine, America's most immediate bid for turbo-prop supremacy, in the Convair XP5Y-1, four-engine Navy flying boat now being readied for first flight. The T-40, which delivers 5,500 equivalent shaft horsepower but weighs only 2,618 pounds, drives two counter-rotating Aeroproducts propellers. The engine consists of two turbine units geared to a single propeller shaft. The single unit, known as the T-38 can be operated by itself and Allison is now installing a pair in a Convair-Liner for test work.

Spaatz Collection: The Library of Congress has published a 33-page booklet describing "The General Spaatz Collection," a compilation of letters of the former USAF chief which the Library has acquired. The booklet is available free upon request from the Publications Section, Library of Congress, Washington 25, D. C.

Court Upholds CAB In Piedmont Award

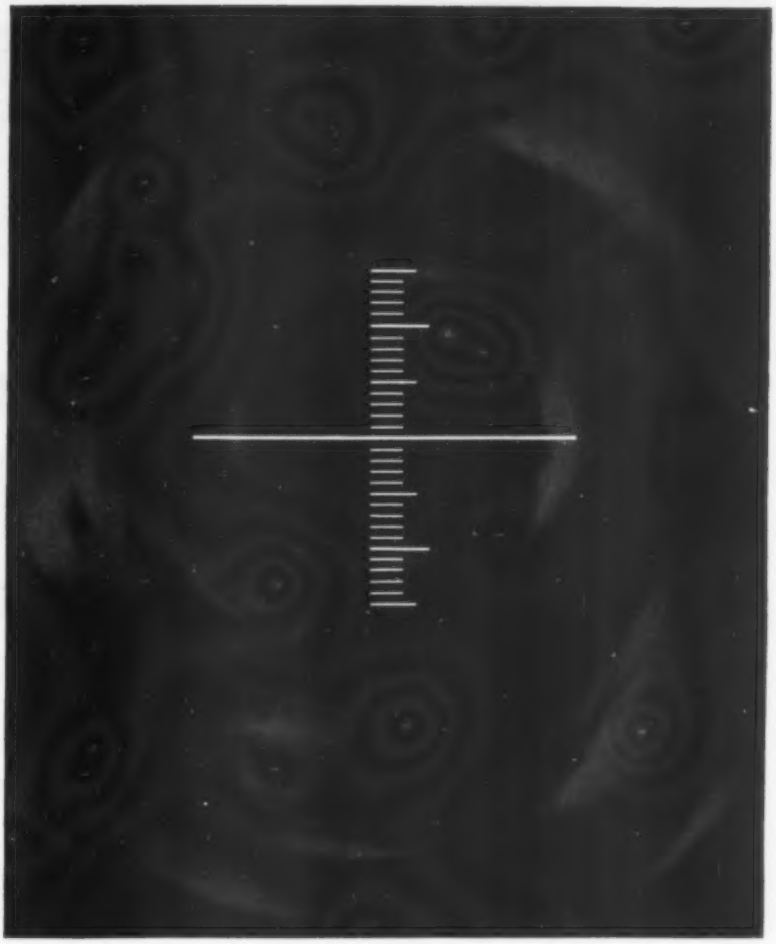
The United States Supreme Court ruled last month that the Civil Aeronautics Board has legal authority to award an air route or route segment to a carrier which has not specifically applied for it.

The opinion was issued on an appeal from a lower court decision that the Board had illegally awarded to Piedmont Airlines certain east-west feeder routes for which State Airlines, Inc., of Charlotte, had applied but not Piedmont.

CAB had frequently departed from route applications in making route awards, but its authority to make such departures had not been contested in the courts until State chose to fight the route award made to Piedmont in the Southeastern States Case decision. The Circuit Court of Appeals for the District of Columbia Circuit upheld State's contentions and remanded the case to the Board, but at the same time expressed a doubt that it had the authority actually to order the Board to award the routes to State. Both CAB and Piedmont joined State in appealing to the Supreme Court.

The Court, in a 6-2 opinion, held that CAB as the power to make a departure from the applications provided all applicants have adequate notice that the successful applicant might be regarded as an applicant for the routes in question. It held that CAB's route application machinery and the catch-all clause, in which each applicant agrees to whatever modifications the Board might make, should have put State on notice.

Award of Merit—Capital Airlines President J. H. Carmichael (left) is shown presenting an Award of Merit to P. W. Litchfield, Goodyear Aircraft president, in recognition of the company's contributions to the development of the cross-wind landing gear. Capital recently announced that it would install the Goodyear cross-wind gear on its three new Douglas Super DC-3 aircraft.



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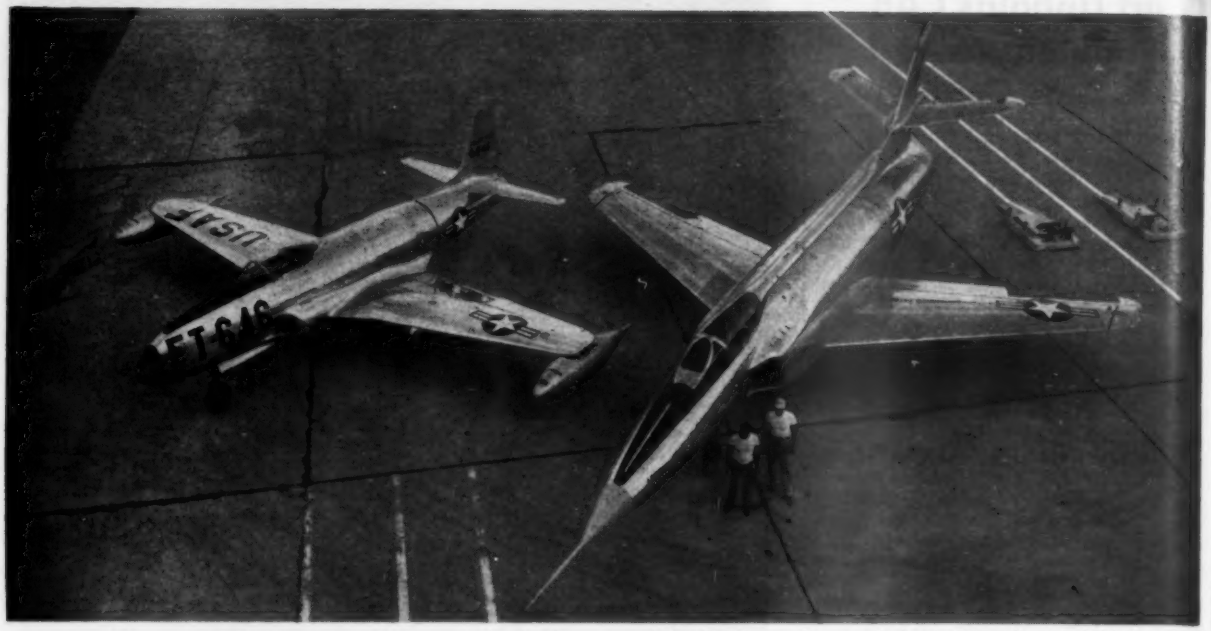

Jet Progress—A graphic illustration of progress in the development of jet aircraft is this photo of two Lockheed Aircraft Corp. Air Force fighters developed over a six-year span from 1943 to 1949. At left, the well-known F-80 Shooting Star, developed in 1943: wing span 39 feet, length 34½ feet, weight, 12,000 pounds, speed about 600 mph. At right is one of the brightest fighter prospects in the USAF, the XF-90, powered by two Westinghouse J-34 jet engines; wing span is only a foot more than that of the "80" but length is 56 feet. It weighs 30,000 pounds, more than 4,000 pounds more than a DC-3 in airline service. Speed: whoos-s-s-sh.

Culbert Heads NWA Traffic Department

Amos Culbert, who had been vice president of American Airlines for seven years before resigning January 15, last month was named to succeed R. O. Bullwinkel as head of Northwest Airlines' traffic department.

Bullwinkel had joined Northwest in 1943 as assistant to the president on the west coast. He became general manager of the traffic department in 1946 and vice president-traffic a year later.

Before joining American Airlines in 1942, Culbert had served for nine years with Chicago and Southern Air Lines as a vice president, treasurer and general counsel. He is a former president of the Airline Finance and Accounting Conference, a past director of Air Cargo, Inc., and has been chairman and a member of important committees of the Air Transport Association.

Osborne Resigns EAL Traffic-Sales Post

Stanley de J. Osborne, vice president in charge of traffic and sales for Eastern Air Lines since 1945, has resigned to accept an important executive position with the Davison Chemical Corporation in Baltimore.

His resignation followed by less than two weeks that of Prescott A. Tolman, EAL general sales manager. Neither position had been filled at publication time.

The following changes in Eastern's traffic and sales department were made as a result of Osborne's resignation:

Herbert S. Dobbs has temporarily assumed the duties of vice president-traffic and sales, in addition to his regular duties as Latin American Division manager. The functions of the traffic and sales department are under the jurisdiction of and channeled through Paul H. Brattain, first vice president. Maurice Lethbridge has become assistant to Brattain, handling matters pertaining to advertising, sales promotion and other related duties. And all matters pertaining to scheduling are now under the direction of a scheduling committee composed of Brattain, Dobbs, S. L. Shannon, E. E. Skinner, R. W. Gilbert and J. A. Hamill.

Amos Culbert
Joins Northwest Airlines

People in the News

William Webster, executive vice president of the New England Electric System, has been named chairman of the Research and Development Board, filling the vacancy caused by the recent resignation of **Dr. Karl C. Compton.**

S. Thomas Simon, formerly an attorney with the Bureau of Hearing Examiners of the Civil Aeronautics Board, has been promoted to assistant chief examiner in charge of the Safety Enforcement Proceedings Division. He succeeds **Merrill Armour,** who resigned recently to join the Aircraft Owners and Pilots Association.

Robert Guest, formerly treasurer of Air Cargo, Inc., has been named manager of the recovery division of the Aetna Insurance group in Hartford, Conn., assigned to air carrier and aircraft manufacturing accounts.

Alexander T. Burton, eastern representative of North America Aviation, Inc., was elected president of the Aero Club of Washington to succeed **William T. Raymond,** director of government affairs for the Air Transport Association.

Delos W. Rentzel, Civil Aeronautics Administrator, had the honorary degree of doctor of laws conferred upon him by the University of Miami on February 6.

PEOPLE IN THE NEWS

Charles B. Rayner, formerly of American Independent Oil Co. of California, has been appointed chief petroleum adviser for the National Security Resources Board.

Brackley Shaw, who resigned in December as general counsel of the Department of the Air Force, has become a member of the law firm of Pogue & Neal in Washington. He was with a New York law firm before entering military service in 1941.

Ira H. Abbott has been appointed assistant director for research with the National Advisory Committee for Aeronautics. He has been with NACA since 1929 and has been a consultant in NACA headquarters for the past two years.

Brig. Gen. Donald N. Yates, chief of the Air Force's Air Weather Service, MATS, has been elected president of the American Meteorological Society for a term of two years.

CAB CALENDAR

Mar. 1—(Docket 3589 et al.) Oral argument before the Board in North Atlantic Route Transfer Case (PAA-AOA Merger). 10 a. m., Room 5042, Commerce Building, Washington.

Mar. 1—(Docket 3966 et al.) Limited hearing in the matter of renewal and amendment of West Coast Airlines, Inc. route certificate. 10 a. m., Salem Chamber of Commerce, 147 N. Liberty, Salem, Oregon. Examiner Ferdinand D. Moran. Will be recessed for further hearings in Washington on March 13, 1950.

Mar. 6—(Docket 3661) Hearing Twin Cities - Washington - Detroit - Washington Through Service Investigation. Tentative. Examiner William F. Cusick.

Mar. 6—(Docket 3500 et al.) Hearing in National Airlines, Inc. Dismemberment Case. 10 a. m., Conference Room B, Departmental Auditorium, Washington. Examiners Francis W. Brown and James S. Keith. Postponed from January 25.

Mar. 7—(Dockets 4228 and 4229) Prehearing conference in American Overseas Airlines-Transcontinental & Western Air, Inc. Philadelphia Suspension Case (International Routes). 10 a. m., Room C-116, Temp. Bldg. 5, Washington. Examiner Herbert K. Bryan.

Mar. 8—(Dockets 548 & 501 et al.) Oral argument before the Board in Reopened Mississippi Valley and Southeastern States Cases. 10 a. m., Room 5042, Commerce Building, Washington.

Mar. 13—(Docket 3966 et al.) Hearing resumed in West Coast Airlines Certificate Renewal and Amendment Case. 10 a. m., Conference Room "B," Departmental Auditorium, Washington, D. C. Examiner Ferdinand D. Moran.

Mar. 14—(Docket 4084) Hearing in Enforcement Proceeding against Peninsular Air Transport, et al. Tentative.

Mar. 15—(Docket 4199) Hearing in Arrow Airways Enforcement Proceeding. Tentative.

Mar. 27—(Docket 4194) Hearing in National Travel Club Enforcement Proceeding. Tentative. Examiner F. Merritt Ruhlen.

Mar. 17—(Docket 4161) Hearing in enforcement proceeding against Trans American Airways, Great Lakes Airlines, Golden Airways, Edward Ware Tabor, and Sky Coach Airtravel. Tentative. Examiner Baron Fredericks.

Aviation Calendar

March 1-2—Louisiana Aviation Conference, Washington-Youree Hotel, Shreveport.

March 1-2—National Fire Protection Association Committee on Aviation and Airport Fire Protection meeting, Hotel Severin, Indianapolis, Indiana.

March 6-8—CAA Fourth Region sixth annual Non-scheduled Operators' Meeting, Hotel Texas, Ft. Worth, Texas.

March 6-8—Second annual National Agricultural Aviation Conference, Hotel Texas, Ft. Worth, Texas.

March 6-9—Airport Division, American Road Builders' Association, annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio.

March 24—Institute of Aeronautical Sciences fifth annual Flight Propulsion Meeting. Carter Hotel, Cleveland, Ohio.

March 30-31—Sixth annual Helicopter Forum (sponsored by American Helicopter Society and Institute of the Aeronautical Sciences), Ben Franklin Hotel, Philadelphia, Pa.

March 31—Greater New York Safety Council conference on air travel safety, Hotel Statler, New York, N. Y.

April 4-6—ATA annual Engineering and Maintenance Conference, Hotel Continental, Kansas City, Missouri.

April 10-14—American Society of Tool Engineers exposition, Convention Hall, Philadelphia, Pennsylvania.

April 16-20—American Association of Airport Executives annual meeting, Nell House Hotel, Columbus, Ohio.

April 17-19—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, New York City.

April 24-26—Airport Operators Council third annual meeting, Hotel Carter, Cleveland, Ohio.

June 1-3—Aviation Writers Association convention, Montreal, Quebec.

June 2-11—7th annual Michigan Aviation Week (sponsored by Aero Club of Mich.).

June 4-9—SAE summer meeting, French Lick Springs Hotel, French Lick, Indiana.

June 10-13—National Aeronautic Association 28th annual convention, Hotel Statler, St. Louis, Missouri.

June 21-25—Ninety-Nines convention, Ft. Clark Guest Ranch, Branchettsville, Texas.

June 26-30—American Society for Testing Materials annual meeting and exhibit of testing apparatus and equipment, Atlantic City, N. J.

July 25-30—Academy of Model Aeronautics national model airplane championship contest, Naval Air Station, Dallas, Texas.

Sept. 18-22—Instrument Society of America, 5th annual Instrument Conference and Exhibit, Memorial Auditorium, Buffalo, New York.

International Calendar

March 21—ICAO African-Indian Ocean-Middle East Fixed Services meeting, Paris.

March 21—ICAO African-Indian Ocean-Middle East Frequency meeting, Paris.

Mar.-Apr.—ICAO Southeast Asia Frequency meeting, location undecided.

April 11—ICAO Caribbean regional meeting, Havana.

May 30—ICAO Fourth Assembly, Montreal, Quebec.

May 30—ICAO Legal Committee meeting, Montreal, Quebec.

October 16-20—IATA annual general meeting, Fairmont Hotel, San Francisco.

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Between the Lines:

Limits on M-Day Expansibility

By James J. Haggerty, Jr.

IN RESPONSE to critics of his "economy" program, which involved cutting back the better part of a billion dollars from the funds appropriated the services in this fiscal year, Defense Secretary Louis Johnson has stated that the defense establishment he is maintaining is "adequate for the hour."

Speaking strictly from the aviation standpoint, we don't believe a 48-group Air Force is adequate for this or any other hour as long as the current international tension continues.

But, charitably, let's give Secretary Johnson the benefit of the doubt and assume it is adequate. One question then comes to mind. What if "the hour" takes a turn for the worse and we suddenly require, on overnight notice, a larger defense establishment to meet the new hour's adequacy? Does Mr. Johnson feel that all he has to do is turn a knob and adjust the size of the armed services accordingly? Does he think that he has merely to open the vault where he has stored his cutback funds and dole them out to the services, who, in turn, will immediately expand to sizes commensurate with the adequacy of the new hour?

If he does we suggest that he get a copy of a book published by a division of his own Defense Department. The book is entitled "The Buyer's Guide for Production Planning, Scheduling and Budget Estimating," and it was published only three weeks ago by the Directorate of Procurement and Industrial Planning of the Air Force's Air Materiel Command.

Production Lag

Everyone is aware that swinging into all scale production of aircraft is not an overnight matter. You can not just order a new plane and have it delivered on your doorstep the following morning. We have always been aware that there is a lag between the time the order is placed and the time the plane is delivered to an operational unit, ready for service. But, until the "Buyer's Guide" was published, we were not aware of the extent of the lag time, or setback time, as it is known. Some of these setback times cause considerable eyebrow lifting.

Setback time is the overall period between the placing of an order for an airplane and its actual acceptance by the Air Force. It is broken down into three subdivisions:

1) **flow time,** which relates to the components of the airplane. It is the time between the date the component manufacturer receives his order and the date the component is completely fabricated and ready for shipment

2) **shipment time,** between the component manufacturer's plant and the airframe manufacturer's plant

3) **lead time,** which is the time between the arrival of the component at the airframe manufacturer's plant and the acceptance date of the plane.

The "Buyer's Guide" lists first the flow times of various components, and, as we said, some of them are quite surprising. For instance, if an order is placed today for a bombing navigational computer it will be 104 weeks before that piece of equipment is completed. Add to that an arbitrary month for shipment to the plane builder and the lead time, which in the case of a typical airplane such as the Convair B-36 in *peak production* is 17 weeks, and you have a total of 125 weeks before the computer is installed in an airplane.

Here are a few of the flow times the "Guide" lists for aircraft components:

B-36 remote control turret system, 80 weeks
Fire control systems, 76 weeks
Jet engines, 67 weeks
Piston engines, 3,000 horsepower class, 62 weeks
Bomb, gun and rocket sights, 60 weeks
Autopilots, 52 weeks

And here are some of the lead times required to install these components in various airplane types *(in peak production):*

Convair B-36	12-23 weeks
Boeing B-47	14-24 weeks
Republic F-84	6-8 weeks
North American F-86	4-16 weeks

The range in lead times depends upon the type of component, of course. For instance, in the case of the B-36, the lead time for a propeller assembly is only 12 weeks, but for superchargers it is 23 weeks. Obviously, a B-36 equipped with all its propellers but no superchargers is not much of an airplane. As the "Guide" states: "One relatively simple item such as an electrical plug or a hydraulic fitting can keep an airplane on the ground (just) as can a major item such as an engine." The actual setback time, then, is the sum of the *highest* component flow time and the *highest* lead time in a specific airplane, with allowances for shipment.

132 Weeks for B-47

Adding up a couple of these setback times you get some rather startling figures. For instance, if an order is placed today for a B-47, it will be *132* weeks before that plane, complete with bombing computer, fire control systems, engines, turrets and what have you, can be accepted as a first line military airplane.

These figures are all based on current production schedules. The 132-week figure for the B-47 could no doubt be pared considerably under emergency conditions. But how much could it be pared?

And every time Louis Johnson withholds more procurement money he is stretching that setback time. It must be remembered that 48 groups, or 58, or even 70 could not fight an air war. The 48 groups, instead of being considered as a fighting force, should be considered as a nucleus for expansion to full wartime strength. The ability of the aircraft industry to jump into full scale production to provide this expansion should be an item of primary concern. It appears that the policy of the Defense Department is to permit only enough procurement to provide defense "adequate for the hour," when it should be more concerned with M-Day expansibility.

It should be obvious from the above that Louis Johnson can not just turn a knob and adjust his defense forces to a desired level, so the "adequate for the hour" theme doesn't hold water. We suggest that Mr. Johnson get a copy of "The Buyer's Guide" and study it carefully—very carefully.

Industry Personnel

Robert L. Earle has resigned as senior vice-president of Curtiss-Wright Corp. in charge of aeronautical operations and as a director of Wright Aeronautical Corporation.

Roy J. Sandstrom, who had functioned as executive chief engineer for Bell Aircraft Corporation since May, 1948, has been given the title of chief engineer. He has been with Bell since 1938 and at one time was project engineer on the supersonic X-1. He had been with Curtiss-Wright and Lockheed before joining Bell.

Sandstrom

K. F. Leaman has been appointed assistant division manager for Consolidated Vultee Aircraft Corp. at San Diego. He had been San Diego works manager since August, 1948, and before that was works manager at Fort Worth.

Col. Clarence D. Chamberlin, famous trans-Atlantic flyer, has taken the post of sales promotion manager for Bellanca Aircraft Corporation.

J. E. Winchester has been named sales manager for Curtiss-Wright Corporation's Airplane Division at Columbus. He has been with C-W for 10 years except for a period of 18 months when he was chief engineer of Slick Airways.

Military Personnel

Maj. Gen. James S. Stowell, former deputy commanding general for flying training at Air Training Command headquarters, has been reassigned as deputy commander of the Continental Division of the Military Air Transport Service, Kelly Air Force Base, San Antonio; **Maj. Gen. Archie J. Old, Jr.,** former commander of MATS' Atlantic Division; becomes deputy commanding general, Eighth Air Force, Carswell AFB; and **Brig. Gen. James W. Spry,** former deputy director of maintenance, supply and services in the Office of the Deputy Chief of Staff, Materiel, replaces Old in the Atlantic Division post. All assignments are effective March 1.

Brig. Gen. Horace A. Shephard, formerly chief of the Procurement Division, Air Materiel Command, Wright-Patterson AFB, has been reassigned as Assistant Deputy Chief of Staff, Materiel.

Vice Admiral John H. Cassady, former commander of fleet air operations at Jacksonville, Fla., has assumed new duties as Deputy Chief of Naval Operations-Air, replacing **Vice Admiral Calvin T. Durgin.**

Production Spotlight

Navy Plane Orders: The Navy, like the Air Force, has been keeping very quiet about the types of planes it is procuring in the current fiscal year, for reasons sufficiently confused as to defy definition. However, AMERICAN AVIATION has learned that the Bureau of Aeronautics has placed orders for more than 700 of the 768 airplanes the Navy is authorized to buy in fiscal 1950. The accent, as it should be, seems to be on anti-submarine warfare.

Grumman Aircraft Engineering Corp. is the top Navy contractor for the year, with orders for 314 planes: 242 F9F Panther jet shipboard fighters, 36 AF2W's and 36 AF2S's, the latter planes being anti-submarine attack aircraft which work as a team. One, equipped with search radar designed to locate even schnorkel-type subs, finds the target, the other guided to the spot, destroys it. The AF's are already in production, 23 having been ordered in fiscal 1949. This year's Panthers come in two models: the F9F-4, which is powered by a late model, high-thrust version of the Allison J-33 engine, and the F9F-5, which will be powered by Pratt & Whitney's new 6,250 pound thrust (8,000 pounds with afterburning) J-48 engine.

McDonnell Aircraft Corp. has received an order for 140 more F2H Banshee jet fighters. The new Banshees will be F2H-2's, the major change over previous models being the addition of droppable wing-tip fuel tanks to extend the already considerable range of the plane.

Chance Vought Aircraft Division of United Aircraft Corp. received an order for 60 F4U-5N's, the "N" being a night-all-weather version of the gull-winged piston-engine Corsair. Chance Vought was also scheduled to receive an order for 90 additional F7U-2 Cutlass tailless jet fighters, but this order has at least temporarily been withdrawn from the 1950 schedule.

An additional 45 P2V Neptune patrol bombers was ordered from **Lockheed Aircraft Corp.** The 1950 Neptunes are P2V-5's, radar-equipped for anti-sub work, with a bulging radome located underneath the fuselage at the leading edge of the wings. Lockheed also received an order for 10 more TO-2 two-seat jet trainers; the TO-2 is the Navy equivalent of the Air Force's T-33A, basically an F-80 Shooting Star with an extra seat.

Production of **Douglas Aircraft Co.'s** F3D Skyknight two-seat night-all-weather jet fighter will be continued in fiscal 1950 with an order for 70 F3D-2's. Douglas was also given a continuing order for 53 AD Skyraiders, single-seat, piston-engine-powered attack bombers.

Other Navy procurement for fiscal 1950 includes orders to **North American Aviation** for 15 AJ three-engine (two piston, one jet) attack bombers, to **The Glenn L. Martin Co.** for five P5M two-engine flying boats, and to **Piasecki Helicopter Corp.** for about a half-dozen HUP seven-place tandem-rotor helicopters. The latter order may be increased.

Flight Test: *Republic Aviation Corp. has been given the "go-ahead" to install the auxiliary rocket engines in the XF-91 jet interceptor now undergoing test flights at Edwards Air Force Base, Calif. The XF-91 was originally designed for four rocket engines in the tail for rapid take-off and climb, but has been flying its early flights on jet power alone. The rockets to be installed are manufactured by Curtiss-Wright Corp.'s Propeller Division . . . Lockheed Aircraft Corp.'s second XF-90 twin-jet penetration fighter is now being readied for first flight. The No. 1 XF-91 has logged more than 60 flight test hours at Muroc and has been tested for firing of rocket ammunition and bomb dropping . . . Convair has announced that the Allison Turbo-Liner, a Convair-Liner equipped with Allison T-38 turbo-prop engines, will be ready for first flight in June.*

More B-36's: The Air Force has revised its procurement plans for the Convair B-36 Bomber. Originally, it had been planned to order 34 more B- and RB-36's this year, but new plans call for 47 planes. There are also indications that procurement of the B-36 will be continued beyond its planned expiration date. Fiscal 1952 was supposed to be the last year for B-36 contracts; the Convair bomber was then to have given way to the Boeing B-52 six-jet long-range bomber. Now it appears that B-36 production will be continued at least one more year.

—J. J. H.

Four Proposals—No Answers:

CAB and Industry Confer On Transport Testing Needs

By WILLIAM D. PERREAULT

Recently the CAB called together representatives of the airlines, manufacturers, the military services and the airline pilots to discuss the need for additional service testing of transport aircraft prior to use in passenger carrying operations. The move was the first coordinated effort to solve a problem that has been growing in importance during the post-war period.

As opposed to the present minimum requirement of 150 hours accelerated service testing for new transport aricraft, the industry representatives at the meeting reviewed four other programs. These were: (1) an ALPA proposal that three ships be used in cargo service for 1,000 hours each prior to introduction into passenger service and that the 1,000 hour lead be maintained thereafter.

(2) An Aircraft Industries Association proposal for safety systems, primarily a tightening up on present arrangements with the operator and manufacturer coordinating activities under CAA surveillance, (3) a CAB-suggested safety service committee involving appointment of a group of experts to follow the plane through the design, planning, production and operations life of the ship and make recommendations as needed, and (4) an EAL quasi-suggestion as to how they planned on insuring service safety of their new twin-engine equipment.

Past Record

Theoretically, under the present system, the Lockheed Constellation underwent 100 hours service testing prior to use in passenger service, the Douglas DC-6 had 150 hours accelerated service testing and the Boeing Stratocruiser 200 hours. Design bugs were located and corrected. But after the airplanes were in service both the Constellation and DC-6 were grounded because of airworthiness items.

Engine troubles have plagued the Boeing since it entered service. One airline has had an unscheduled engine change every 205 hours of operation at a direct cost of over one half million dollars. During the same period premature propeller removals were common and some 38 cruise superchargers were removed.

Testing Time

Would another 850 hours of service testing have ironed out some of these engine difficulties before the airplane went into service or would it take 3,500 hours or possibly 35,000 hours testing to provide that additional degree of safety which is being sought? This was the problem under discussion.

Contrary to the basic conception of a plane entering regular service with 150 hours service testing, CAA's director of Aviation Safety, George Haldeman, pointed out that the average transport has about 775 flight hours on it prior to starting passenger schedules. About 500 hours of this is accumulated by the manufacturer before he turns the ship over for certification, another 75 hours is built up during certification, 150 hours or more is added during the accelerated service test and a minimum of 100 hours is obtained in proving runs over the routes.

ALPA's View

Based on the presumption that the ship has 150 hours service testing, which is the amount that it gains during the accelerated service testing, Theodore Linnert voiced the Air Line Pilots Association stand that three new ships should have 1,000 hours service time each before the production models enter passenger service. This 1,000 hour lead would then be maintained. Linnert indicated that it would cost about $680,000 per model during the 850-hour spread between the present and proposed accelerated service test.

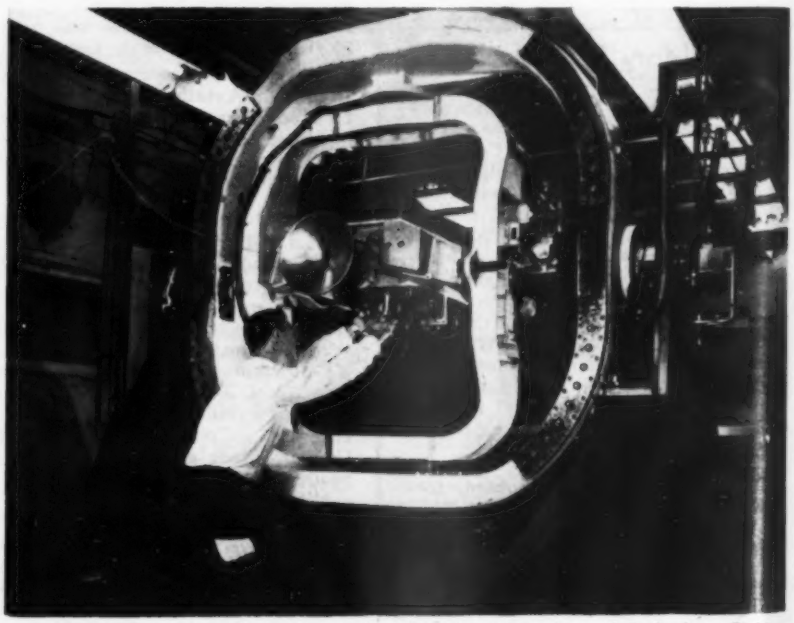
The ALPA representative compared this figure with the estimated $46,672,000 potential loss experienced when the 93 Douglas DC-6's were removed from service for four months. This figure was based on a potential 66,960 available revenue-miles at $700 per hour.

Grounding Costs

In his introductory remarks at the meeting, CAB member Oswald Ryan stressed that "very few of the safety subjects with which we deal in Civil Air Regulations can be completely divorced from the economic factor—one simply can not be considered without the other." But the $680,000 figure introduced by Linnert moved Ryan to cite the cost of the Constellation and DC-6 groundings to the government at $7 million. He cited temporary mail rates which granted American and United $2 million each to cover this grounding and $3 million total to TWA's domestic and international operations.

CAB's director of safety, John Chamberlain, commented, "It may very well be that the government in some way or another is going to be called upon to play a very important part in the economic side of this picture." AIA's Ivar C. Peterson indicated that financing of future transport servicing costs will probably be worked out through the provisions of a prototype bill.

The problem of keeping the flight time



MIT Simulator—Shown here is the Massachusetts Institute of Technology flight simulator which permits design engineers to 'fly' a non-existent airplane. By setting up an "electrical model" of an airplane design and applying an actual autopilot to fly it, engineers can tell whether the design will perform satisfactorily. If it doesn't, the characteristics of the electrical model may be changed until satisfactory performance is obtained; then the airplane design may be altered accordingly.

of cargo-operated aircraft ahead of flight time on passengers ships was emphasized by Jerome Lederer, president of the Flight Safety Foundation. Lederer pointed out that utilization of cargo aircraft is traditionally far below that of passenger ships and this would require artificial support of the flight time of the service test models once the other planes entered service.

Lederer indicated that the cost of such support would be about $2,000 per airplane hour or about $6 to $7 per mile. Meanwhile delivery of the production model aircraft, and perhaps even production of the ships, would be delayed some six months pending outcome of the first 1,000 hours. He concluded that, although as far back as 1938 he had favored such a program, "My thinking is that more service testing is not ordinarily going to be practical and insistence upon it will further widen the gap which already exists between the cost of the airplane and the price that can be paid for them."

Regardless of cost and who is to support the cost, Lederer introduced figures which tended to question the relation of service time to service troubles. He showed that the Constellation service testing uncovered 18 items of importance in the first 35 hours but only 90 in the following 35,000 hours. With 60,500 hours service testing on the Douglas DC-6, covering a 12-month period of operation, there were 98 items uncovered. Seven months of this latter time was in passenger carrying and five months in proving flights.

Safety Service Committee

The suggestion for a safety service committee did not fare too well. AIA's Peterson indicated that such a group would "expert the thing to death" while giving the committee the "position to recommend and never have any responsibility for anything that did not go the way that they think it should have."

While such a group would theoretically "have no axe to grind," an insurance company representative, J. P. Risque of the Associated Aviation Underwriters, indicated that "it is impossible to divorce employes from their previous employment" in such matters.

Peterson indicated that most items of the type considered are matters of opinion and that the manufacturers have experts whom they depend on for decisions. This was followed by comments by Haldeman which indicated that the Type Certification Board serves much the same capacity as the proposed safety service committee. It watches the design and production develop, and when necessary advises on the service airplane.

Haldeman traced the history of the TCB used for the Douglas DC-6 which was later, following certification, called

Technical News Digest

• **Stockholders of Aviation Maintenance Corp.,** Los Angeles, Calif., have voted to wind up the company's affairs, liquidate its assets and dissolve the corporation upon completion of current contracts. Unaudited figures show the company has assets exceeding its current liabilities. AMC has just completed a contract with American Airlines for overhaul of Douglas DC-4's and has yet to complete 16 of 78 T-11's which it is reconditioning for the USAF.

• **The Air Line Pilots Association is working** with CAA to establish whether or not the present "T" category operations requirement are adequate for safety and to provide data for aeronautical design engineers and airline operational departments with particular reference to maximum gross weight limitations as affected by overloading, temperature accountability, etc. Tests will be conducted in a CAA-owned DC-4 under various climatic conditions.

• **The Curtiss-Wright Aeroplane Division** at Columbus has wound up its long-term contract for the overhaul of 98 C-46 Curtiss Commandos and 36 R5C's (Navy C-46's) for the military services.

• **The Air Transport Association,** 1107 Sixteenth St., N. W., Washington, D. C., is making a check of industry groups interested in obtaining verbatim transcripts of the 1950 ATA Engineering & Maintenance Conference to be held in Kansas City in April. Approximate cost of the transcript would be between $18-$20. Inquiries should be addressed to Allen W. Dallas, secretary, Engineering and Maintenance Conference.

• **Jet-type aircraft will participate** in the 12,000-mile "Christchurch" air race for the first time in 1953. Prizes totaling $84,000 will be awarded to the race contestants who cover the route to Christchurch, New Zealand, which includes stops at Basra, Calcutta, Singapore and an unannounced point on the east coast of Australia. The race is divided into two sections—transport and speed—both to include handicaps. British European Airways has entered the turbo-prop-powered Vickers Viscount in the race and British Overseas Airways will participate, probably with the turbo-jet-powered de Havilland Comet.

• **The USAF has contracted** with Sperry Gyroscope Co. for 45 electronic engine analyzers for use on the Convair B-36's and Boeing B-50's. The $750,000 order represents a service test order which will be used by the Air Force's Strategic Air Command to determine its value as a cruise control-instrument as well as an aid to maintenance crews in troubleshooting. The Air Force has been testing a single analyzer since June in a B-50.

• **Three of UAL's top engineering** and operations supervisors have started on a tour of England, Sweden, Denmark, Holland, Belgium, France, Switzerland and Italy to observe foreign commercial aircraft and airline operations. The group includes J. A. Herlihy, vice president-operations, Frank F. Davis, his engineering and maintenance assistant, and R. D. Kelly, supt. of technical development.

• **Convair's J. F. Woodall,** acting through the AIA, has issued a report proposing a new regulatory approach for CAA approval of thrust-assist power units in the determination of takeoff and climb performance. The study was prepared by Convair for coordination with the manufacturing and airline industries in response to CAA request for comment on its proposed Jato policy.

• **Grand Central Airport Co.,** Glendale, Calif., has signed a modification contract with Northwest Airlines for the conversion of two Douglas DC-4s from standard passenger interiors to air coach types and another two ships from passenger to cargo aircraft.

• **Central Airlines, Inc.** has contracted with Southwest Airmotive Co. at Dallas for the overhaul of the Continental E-185 engines used in its fleet of Beech Bonanzas.

• **Three prominent aviation engineers** appointed to vice-presidencies in the Society of Automotive Engineers for 1950 are: Raymond D. Kelly, superintendent of technical development with United Air Lines to vice president, air transport activity; Harold D. Hoekstra, chief engineer of CAA's Aircraft Division, to vice president, aircraft activity, and Wright A. Parkins, engineering manager of Pratt & Whitney Aircraft, to vice president, aircraft powerplant activity.

• **Pratt and Whitney Aircraft** has reactivated its apprentice training program, the same program which graduated 262 journeymen during the prewar years. Nineteen men, choosen from 280 applicants, make up the first class.

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back together for recommendations on the modification following the grounding and once again for the recertification.

Peterson emphasized that there are two types of "bugs" which develop: those which are design shortcomings and show up early and those which are due to wear and attrition. He cited a letter from A. E. Raymond, of Douglas, favoring the existing accelerated service testing combined with daily operator reports, suitable follow-up action by the manufacturer and surveillance by CAA and CAB.

Plans Outlined

One of the more interesting discussions was that by an Eastern Air Lines engineer, Robert Stark. Stark discussed the plans which EAL expects to inaugurate when a final decision is reached on twin-engine equipment to replace their DC-3's. EAL will send a development group to the manufacturer's plant (Martin is mentioned) consisting of pilots, engineers, maintenance men, and a control group aided by a high-level engineer "for the long hair work."

Stark indicated that in the past the airline was reluctant to send top personnel to the factory because they were needed on their regular jobs. This time, he indicated, the experts would be on hand to make the decisions at the factory. The engineers would be thoroughly familiar with instruments required for critical analyses in the field, the pilots would be qualified line pilots capable of critical analysis and flight testing.

The maintenance group would include electrical and structural experts, all-around men "who have an intuitive sense that tells them something is wrong." The control group would define and analyze the entire program and issue final factual reports on all phases.

No specific answers were sought nor expected from the CAB gathering. It was an opportunity to discuss the problem at this unique time when we "should be able to get sympathetic attention from all parties because there are no new modern, revolutionary-type airplanes on the drafting board or about to be brought from the production line."

ALPA Requests Hearings On Through Flight Conflicts

The Air Line Pilots Association has petitioned CAB requesting that the Board hold public hearings into the Pan American-Panagra Through Flight Agreement prior to extending it beyond its May 5 expiration date. These were the agreements approved three years ago with the proviso that extensions be granted without further hearing if deemed appropriate.

ALPA president David L. Behncke urged the Board that "it will not be appropriate to extend any operating right without requiring the companies and the pilots to satisfy the very real conflicts which exist between these Through Flight Agreements and the Pilots' Employment Agreements." He indicated that these conflicts were causing unrest among the pilots of both airlines.

Production Undercarriage—The four-wheel bogie unit at each main undercarriage leg of the de Havilland Comet is intended to distribute the load and also enable the wheels to fold up into the outer wings without dimpling the wing skin. The prototype has made 121 flights, totalling 153 hours in 158 days up to the end of December. The second prototype and first BOAC aircraft are expected by summer after which a steady line will be built up. Pakistan and other British Commonwealth countries have started to lay out their airport facilities to take the Comet on the London-Australia route.

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CAA's Technical Standard Orders:

Manufacturers Test Own Products Under TSO System

About 18 months ago CAA introduced the Technical Standard Order system to provide systematic approval of airframe equipment items. Since that time 22 of the C-series TSO's, those relating to airframe equipment, have been released. Equipment manufacturers have taken to the new system and about 50 individual units have been approved on the basis of TSO's.

For the first time the manufacturers of such items as instruments, smoke detectors, life rafts and parallel items of equipment know what standards their products are expected to meet in order to gain CAA approval. Instead of spending time and money on development of items which are inherently contrary to CAA policy, the manufacturer now knows what its product is expected to accomplish.

And the proof of compliance rests with the equipment maker. Formerly it was necessary for the manufacturer to conduct tests of its own to prove the product and then conduct tests to obtain CAA approval. Since the introduction of the TSO system, CAA accepts a statement of compliance from the manufacturer indicating that its product meets the related TSO.

Only when industry service results show that the product is not working out according to specifications does CAA require special testing. This actually occurred in the case of smoke detectors. Actually the TSO had been drawn up after the units were in service. At that time service results with smoke detectors were generally discouraging and testing was turned over to the National Bureau of Standards. Deficiencies shown up by the tests were corrected and the airlines are now conducting service tests of the improved detectors.

Problems All Around

But all is not smooth. Soon after the TSO system was introduced steps were taken to make it less potent. Provisions of the early release which made it mandatory to use equipment meeting TSO requirements in certificated aircraft following a certain period were effectively eliminated. Changes were pushed through which made compliance with TSO requirements a thing of the far distant future. Even aircraft being manufactured today, providing they were originally type-certificated with earlier non-standard equipment, need not comply with these equipment standards.

There are economic justifications for the delaying actions. Compliance with the original TSO standards would have required all aircraft in service to use TSO equipment within a given period after adoption of applicable standard. Financially it would have imposed heavy loads on all aircraft operators.

As it now stands the TSO provides the equipment manufacturer with information as to how its product will be expected to perform but the aircraft manufacturer and aircraft operator are not generally affected by the requirements. Even in future designs a provision of the TSO which permits use of "equivalents" will make the TSO an arbitrary gage.

AIA Proposals

Recently the Aircraft Industries Association proposed to CAA that a basic policy be adopted to determine what items of equipment will be subject to TSO's. CAA's Technical Standards Coordinator, Katherine Stinson, had earlier issued a list of tentative TSO products. Included were tires, wheels and brakes, hydraulic struts, hydraulic equipment, flame-resistance materials and many others.

A number of items on this list, such as cowl and fairing fasteners, self-locking nuts, cable fittings, nuts, bolts, screws, etc., were identified as items which would not be acted on "at this time" per an agreement with the AIA. These were all general utility items.

AIA's recent proposal suggested that only items of equipment required by civil air regulations and those for which performance could be fully defined should be included in the list. If performance of the unit was tied in to the installation involved or if malfunctioning of the equipment would not create a hazard in flight then the product would be ruled out. AIA carried over its insistence that utility parts, glues and other items that form an integral part of the completed airplane structure should not be included.

Non-Standard Standards

Another important provision of the proposal deals with non-standard parts. One of the standards already issued, TSO-C21, deals with non-standard turnbuckles. AIA wants the policy covering TSO's to prevent their being used as an administrative device to provide official sanction to non-standard products. This is based on the present wide coverage of various standards which give the potential manufacturer adequate range in which to work.

This latter provision would provide specific administrative difficulties for CAA. Designers and manufacturers of non-standard equipment find that the aircraft manufacturer is unwilling to use the equipment without first getting CAA approval. When a non-standard item is brought to CAA for approval it must grant approval or show reasonable cause why this is not possible. The problem is closely tied to many other provisions and implications of civil air regulations.

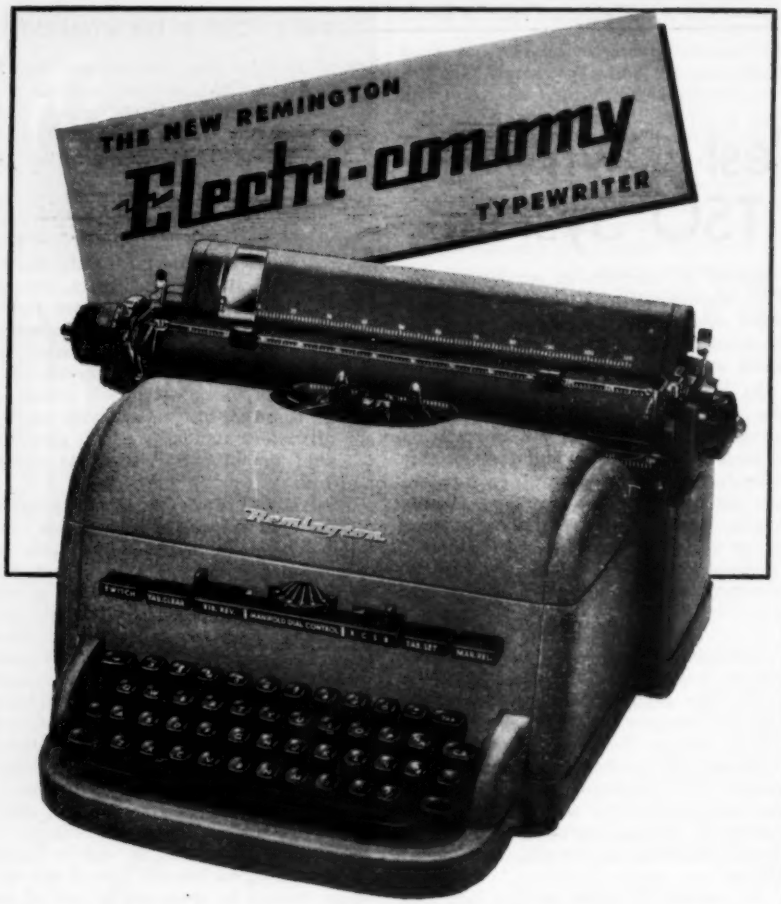
AIA's technical director, I. C. Peterson, indicates that approval of accessories or equipment whose performance in flight is affected by installation provisions of the particular airplane, as well as utility parts forming an integral part of the airplane, should be approved as part of the aircraft, not as specific items of equipment. He bases AIA's stand on the fact that the aircraft manufacturer is ultimately responsible for the satisfactory operation of the equipment and CAA has adequate opportunity to evaluate the aircraft's operation during certification.

In general the TSO's issued to date are providing a useful service. The more obvious needs have already been met and others of importance are underway. The test which lies ahead for the TSO is in its application to items of marginal importance.

Technical Standard Orders

"C" Series-Aircraft Components

Number	Title
TSO-C1a-1	Smoke Detectors
TSO-C2a	Airspeed Indicator (Pitot Static)
TSO-C3a	Turn and Bank Indicator
TSO-C4b	Bank and Pitch Indicator (Stabilized Type) (Gyro Horizon, Attitude Gyro)
TSO-C5b	Direction Indicator, Non-Magnetic, Stabilized Type (Directional Gyro)
TSO-C6b	Direction Indicator, Magnetic (Stabilized Type) (Stabilized Magnetic Compass)
TSO-C7a	Direction Indicator, Magnetic, Non-Stabilized Type (Magnetic Compass)
TSO-C8a	Climb Indicator, Pressure Actuated (Vertical Speed Indicator)
TSO-C9a	Automatic Pilot
TSO-C10a	Altimeter, Pressure Actuated, Sensitive Type
TSO-C11	Fire Detectors
TSO-C12	Life Rafts
TSO-C13	Life Preservers
TSO-C14	Aircraft Fabric, "Intermediate" Grade; External Covering Material
TSO-C15	Aircraft Fabric, Grade "A"; External Covering Material
TSO-C16	Airspeed Tubes (Electrically Heated)
TSO-C17	Fire Resistant Aircraft Material
TSO-C18	Position Light Flashers
TSO-C19	Portable Water-Solution Type Fire Extinguishers
TSO-C20	Combustion Heaters
TSO-C21	Special Turnbuckles



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OPERATIONS-MAINTENANCE

Gilfillan Gets AF Order For 6CA Equipment

The USAF has placed an $8,000,000 contract with Gilfillan Bros., Inc., of Los Angeles for GCA radar landing equipment. The Air Materiel Command now has 27 air-transportable GCA's and forty fixed-type GCA units on order with Gilfillan.

Under development contracts with Watson Laboratories, Gilfillan has reduced the 22-ton, 5-man GCA unit to a 7-ton, 1-man unit suitable for quick disassembly and air shipment. GCA is the primary landing aid of the USAF, USN, USMC, the RAF and RCAF.

CAA is also installing additional GCA units and plans on having 82 installations by 1953. Gilfillan is working on an order to provide GCA sets at Los Angeles, Atlanta, Boston, Cleveland and St. Louis as well as replacement units at Chicago, New York and Washington. The French Government recently ordered Gilfillan GCA for installation at Orly Field, Paris.

Plane News

First delivery of **American Airline's** newly-ordered **DC-6B's** will be made next February with final deliveries completed by mid-summer, 1951. The $13,000,000 AA order covers eleven 52-passenger Douglas DC-6B's including spare parts. This will bring American's DC-6 fleet to 60 airplanes. Three of the fleet will be used as 70 passenger coaches on the New York-Chicago-Los Angeles route.

The DC-6B is an elongated version of the DC-6 powered by four P&WR-2800-CB16 engines rated at 2,400 horsepower each, an increase of 1,200 horsepower per airplane. This will permit cruising speeds in excess of 300 mph and an additional 4500 pounds payload. Top speed is 360 mph, range is 3500 miles. The 61 inches additional fuselage length will be used for cargo instead of providing additional seats as provided for in the Douglas proposal.

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Testifying in the New York Area Helicopter Service Case, Frank N. Piasecki, president of **Piasecki Helicopter Corp.**, stated that the HRP type of helicopter could operate in the New York area at a direct seat mile cost of a little over 3c. This is directly comparable with the cost of Douglas DC-3 cost. Piasecki also urged that the availability of a fleet of commercial helicopters in an emergency is of great importance.

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The third of five **Convairs** completed for delivery to the Argentine airline **FAMA** almost a year ago has now been delivered. The first two were flown to Buenos Aires by Convair crews during January but delivery of the final three ships has been delayed because of dollar shortages in that country. The remaining two **FAMA** Convairs are still being delayed pending final settlement of the dollar contract.

Among the Suppliers

Col. Frank R. Cook, chief of an Air Force headquarters division at Washington, has joined **Minneapolis-Honeywell Regulator Co.** as director of aero engineering . . . **Benjamin S. Yaffe**, formerly a chemical engineer with American Airlines, has joined the **Industrial-Aviation Division of the R. M. Hollingshead Corp.**, Camden, N. J., in connection with a technical sales program . . . **Rhodes Lewis Co.**, Culver City, Calif., designers and manufacturers of precision aircraft and ordnance equipment, has appointed **B. C. McNeill** as assistant to the president. He was formerly with Menasco Manufacturing Co. of Burbank.

Cook

Pacific Airmotive Corp., Burbank, Calif., has appointed Sir George Godfrey & Partners (Canada) Ltd., Montreal, as manufacturers representative to handle the sale of PAC-manufactured test and service equipment and cabin pressurization equipment. The company also announced the appointment of **W. G. McDowell** as Burbank Division manager . . . **Herbert D. Bissell**, former general advertising manager of The Electric Auto-Lite Co., has been appointed executive in charge of the advertising, sales promotion and merchandising departments of **Minneapolis-Honeywell Regulator Co.**, Minneapolis, Minn.

Kevin G. Winker has been appointed sales engineer for **Greer Hydraulics, Inc.**, to assist in the development and application of electric and electronic maintenance and test equipment. New district manager of Greer's Dayton office is **Theodore F. Brick**, former sales engineer for U. S. Rubber Co.

Paul Grotts has joined **Durham Aircraft Service**, Woodside, N. Y., to act as technical adviser to the sales staff and to furnish chemical engineering data to customers. . . . The Small Motor Division of the **Westinghouse Electric Corp.**, Lima, Ohio, has named **J. F. Barbour** manager of the Division's aircraft department . . . **Lear, Inc.**, Grand Rapids, Mich., has appointed **C. E. Mead** manager of its LearCal Division, 11916 W. Pico Boulevard, Los Angeles, Calif.

A military contract, representing the largest peacetime order in its history, has been received by the **Sperry Gyroscope Co.**, Great Neck, N. Y., from U. S. Army Ordnance Department, calling for production in quantity of a new and highly-complex anti-aircraft gunfire control system.

Two new directors were elected at the annual stockholders meeting of **National Aeronautical Corp.**, Ambler, Pa.: **Frederick H. Lee, Jr.**, sales manager for the industrial and aviation division of the R. M. Hollingshead Corp., Camden, N. J., and **Alfred Hunter** of the brokerage firm of Yarnall and Company, Philadelphia.

Extra Section

By William D. Perreault

IT'S ALWAYS surprising to listen to discussions of airplane taxying by people in the fringe industries of aviation and among laymen. They always raise their eyebrows when they learn that the airline mechanic plays jockey to the transports as a part of his everyday job. It calls for a good knowledge of the airplane and a lot of common sense to check out these ships and do the related trouble-shooting when things aren't just right. United Air Lines recently brought the name of Charlie Tucker to our attention. Charlie has been with United since 1934 and as a mechanic has "logged" some 6,000 hours in the cockpit of UAL planes.

•

Going to try for an altitude record? If so, maybe you'd better get a blood transfusion and store up some additional red corpuscles. An added pint of blood introduced into the body will increase man's tolerance for high altitudes. That's the findings of Duke University's Dr. Frank G. Hall, physiologist and pioneer high altitude experimenter. Speaking before a UNESCO meeting recently, Hall discussed controlled experiments which showed that an additional pint of blood will increase man's useful interval of consciousness and his altitude tolerance by about 2,000 feet. Loss of blood has the opposite effect.

•

Talking before the Optimist Club in Washington, D. C., recently, H. G. Crowley, CAB safety investigator, described some strange aspects of airline accident investigation. Referring to the AA incident in which a DC-4 made an outside loop, Crowley told the Optimists: "Several of the passengers were very luscious blondes. One male passenger later told the story of he and all the others, including those beautiful blondes, floating slowly upward toward the roof—just as if being suspended in space. There was a considerable amount of feminine beauty on display all over the roof of the airplane—until —very slowly and steadily, up floated the carpet and cut the view."

•

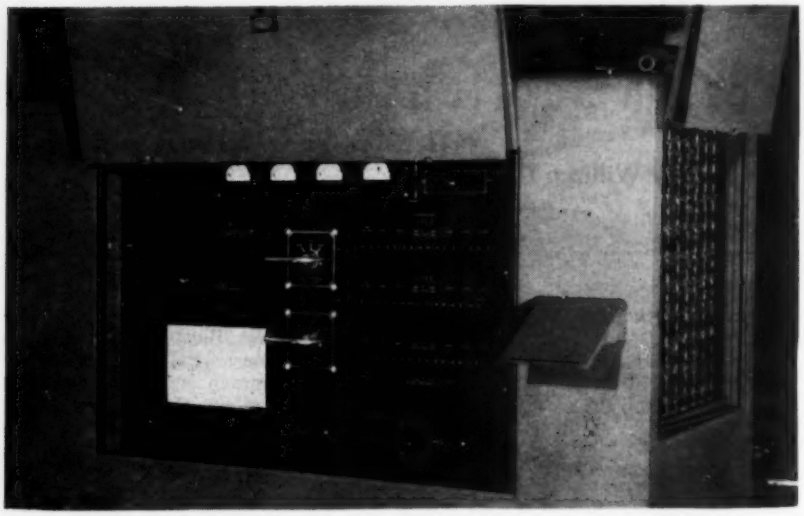
Bill Walner, assistant chief pilot for Braniff Airways, has developed a new type aid for use in "blind flying" checks to replace earlier, more cumbersome, equipment. Made from a pair of dime store eyeglasses with lenses removed, the Walner eyeshade gives the check pilot a normal view from all windows in the cockpit. The basic glasses were modified by sheet metal mechanics at the Braniff base who fitted blinders to the glasses and shaped a narrow shield which covers the lower part of the pilot's windshield, effectively controlling the applicant's field of vision.

•

In looking over the artist sketch of the proposed Boeing jet transport it's interesting to note that the streamlined external fuel tanks are no longer in evidence. Early indications were that there was insufficient wing area to accommodate required fuel for any practical range and external tanks mounted on struts, similar to those used in supporting the engines, would be used. This would have made it possible to jettison the complete fuel tanks and provided a means for rapid refueling by simple replacement of tanks.

•

The Commissary Department at Pan American Airways is supplying flight crews on PAA's cargo aircraft with canned foods which are self-heating. Food content of the cans are contained in an inner can surrounded by space filled with a lime compound and the outer jacket. Puncturing the outer jacket lets water drip on the chemical and causes a chemical reaction which produces heat. Within 12 minutes the crew has a hot meal. Among the items packaged for this service are chicken chop suey, chicken noodles, chicken and rice, hamburger and mushroom, franks and beans, egg noodles a la king, chile con carne, beef stew and corned beef hash.



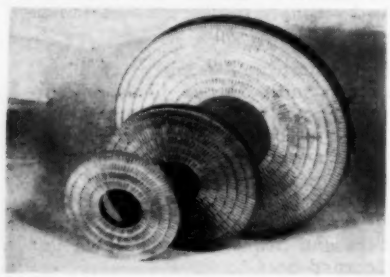
Alternator Test Equipment

Greer Hydraulics, Inc., 454 18th St., Brooklyn 15, N. Y. has announced the production of two alternator test machines, the LB-1 and AA-1. The LB-1 is designed to load test 60-KW, three-phase, 400-cycle alternators with variable resistive loads to simulate actual aircraft installations. The reactive load can be varied from 0 to 48 kva with a power factor as low as zero and the resistive load can be varied from 0 to 60 kva with a power factor of better than 99%. The operator has full control and may set up either balanced or unbalanced loads of any power factor within the machine's range.

The AA-1 is designed for use with the Greer 600-amp Generator Test Stand EG-30-1 and provides the circuits and instruments for load testing small aircraft alternators of 3-phase, three or four-wire type with capacities to 12 kva, 115/250 volts and 300-1000 cycles. It will also test one-phase alternators with an output of 115 volts, 300-1000 cycles and 4 kva. Combined with the EG30-1 stand, the unit provides complete facilities for testing conventional DC generators as well as newer alternators.

Disc File

Kennametal, Inc., Latrobe, Pa., has developed a new type disc file for use on non-ferrous metals and plastics. These are used in place of abrasive wheels for grinding, snagging castings, cutting off flashing, facing and squaring up surfaces, etc. Triangular prisms of Kennametal (90.0 Rockwell A) are copper brazed to the face of a steel backup plate, in a number of courses to form a multiplicity of sharp, sturdy cutting edges. They are shaped, grouped and positioned to provide a 30-degree negative axial rake, a 30-degree clearance angle and a 10-degree negative radial rake. Available in 6", 8", 10" and 12" diameters priced at $107, $185, $255 and $325. Suitable for mounting on a grinder, abrasive disc machine, motor end, or disc file machine with suitable adapter. Recommended for speeds ranges from 5000 to 7000 sfm for hard materials and 8000 to 9000 sfm for soft or gummy materials.



Dynamometers

W. C. Dillon & Co., 5410 W. Harrison St., Chicago 44, Ill., has introduced a new line of Dynamometers in the range of 30,000, 40,000 and 50,000 pounds. These light-weight precision units are used for checking draw bar pull, weight of bulky objects, tension in ropes or cables, static loads, etc. Dial diameter of the units is 10" compared to 5½" on earlier models in the lower capacity version. Figures on the dial are etched. Net weight including shackles is 25 pounds. Will take overload of approximately 15% without injuring calibration. Inside dimensions of shackles is 3⅞ inches long by 2 inches wide. Delivery within 14 days after receipt of order. 50,000 pound model shown.

Inquiries about equipment on this page may be sent either to AMERICAN AVIATION or direct to the manufacturer.

Readers looking for sources of special equipment are invited to write to AMERICAN AVIATION's equipment editor. Every effort will be made to provide information on manufacturers and suppliers who are in a position to furnish or develop needed airborne or ground equipment.

Barrel Truck

Modern Equipment Co., 2007-11 Cuming St., Omaho 2, Nebr., is marketing the "Challenger" barrel truck. The unit is constructed entirely of electrically-welded steel yet weighs only 56 pounds. The design is such that the wheels never leave the floor while using the truck and for storage purposes the truck will stand by itself using a minimum of floor space. This one-man truck is provided with a variety of wheel styles including rubber-tired and semi-steel. Deliveries are immediate from stock.

Ice Guard

Skyline Products, Inc., 92-26 180th St., Jamaica, N. Y., is manufacturing stainless steel ice guards for use on Douglas C-54 and DC-4 aircraft. All parts fully interchangeable, with brackets drilled to fit all aircraft in these series. Provided with Dzus fasteners for rapid and simple installation. Manufacturer claims units now in use by several prominent airlines.

Transparent Plastic

The Moulton Co., Inc., 3210 Winona Ave., Burbank, Calif., has announced Sierracin 212, a non-crazing, thermosetting transparent plastic for single, dual-pane or pressurized aircraft windows. The manufacturer claims that the material has been proved crazing-free in tests in which it was bathed with Isopropyl alcohol, lacquer thinner and various aircraft cleaners including methyl, ethyl, ketone and acetone while under stresses up to 10,000 p.s.i. Complete specifications and data on Sierracin, which has been tested in torsion, load, long period, impact and abrasion tests, is available from the manufacturer.

Airline 1949 Results Set All-Time Traffic Records

A continuing high level of national income, a reassuring airline safety record, and increasing regularity and dependability of flight combined to give U. S. scheduled domestic trunklines the highest traffic volumes in their history last year.

It was a year of noteworthy gains for all categories of traffic carried by the airlines except air express, with the highest percentage gain going to air freight.

Official figures just made available to the Civil Aeronautics Board by the 16 domestic trunk airlines show the following gains in 1949 traffic:

Passengers: A record volume of 14,175,454 revenue passengers flew 6,624,689,000 revenue passenger miles on the 16 lines last year, for all-time new peaks and increases of 14.2% and 13.2%, respectively, over the 12,375,242 passengers and the 5,851,846,000 passenger miles flown in 1948.

Air Mail: Mail volume last year, also the highest ever, was 40,874,188 ton miles, representing an 8.9% gain over the 37,509,922 ton miles flown in 1948.

Air Freight: Freight volume of the 16 trunklines for 1949 rose to 95,505,509 ton miles, which was a 35% increase over 1948 volume of 70,747,973. It was interesting to note that the Big Four—American, Eastern, United and TWA—carried more ton miles of freight last year than did all 16 trunklines in 1948 and more ton miles of freight than the group flew of freight and express combined in 1947.

Both American and United flew more ton miles of freight in 1949 than did all 16 trunklines in 1946.

Furthermore, the Big Four flew more than twice as many ton miles of freight in 1949 as were flown by all 16 trunks in 1947, and two of them—American and United—each flew more ton miles of freight last year than did the entire group in 1946.

Air Express: This was the only class of air traffic to lose ground last year, dropping 8.1% in volume to 27,376,591 ton miles, as compared to 29,788,353 ton miles in 1948. This does not mean this traffic was lost by the airlines, however, for many shipments that formerly went by air express were diverted to air freight and to air parcel post last year, resulting in higher air mail and air freight volumes.

In the passenger department, it was noteworthy that Eastern surpassed both UAL and TWA in revenue passengers carried and held to second place, with American still on top by a comfortable margin. American also held to first place in passenger miles, with UAL second, Eastern third and TWA fourth. Most spectacular gain in passenger miles was made by National, due in part to the fact that a strike had caused its 1948 passenger mile volume to be below normal.

Delta, TWA and Western flew fewer ton miles of mail last year than in 1948, but all the other domestic trunks showed gains in this category.

Large gains in freight volume were

It Pays to Fly

Public Saves $254 Million in Year

In one year's time, the airlines have saved the public a quarter of a billion dollars, based on the value in dollars of the time saved by air travel over surface transport, according to Jess B. Bennett, assistant to the president of Braniff Airways, and in charge of the company's Washington office.

In his study, Bennett assumed that the average passenger's income was $4,000 yearly and that his time was thus worth only $2 an hour. The study showed:

Revenue passenger-miles flown, year ended Aug. 31, 1949	6,370,475,000
Computed at an average speed of 200 mph., this represents the following number of hours in the air	31,852,375
Hours required to travel the same distance by rail (computed at five times air travel)	159,261,875
Hours saved by air passengers	127,409,500
If average air passenger's time is worth only $2 an hour, total gross saving would be	$254,819,000

In analyzing rail and air schedules, Bennett found that air was six times as fast as rail between 11 major points, and that average train delay at Chicago due to change of trains was five hours, whereas average airline delay at the same city was only 33 min.

Domestic Airline Traffic Results--Compared, 1948-49

AIRLINES	REVENUE PASSENGERS (000 omitted)		REVENUE PASSENGER MILES (000 omitted)		MAIL TON-MILES (000 omitted)		EXPRESS TON-MILES (000 omitted)		FREIGHT TON-MILES (000 omitted)	
	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
American	3,227	2,794	1,508,058	1,308,142	8,885	8,093	5,578	5,529	31,845	21,822
Braniff	593	567	199,628	195,356	1,072	948	832	873	1,174	1,196
Capital	1,215	1,033	361,700	281,533	1,066	884	1,747	1,909	7,450	5,199
C & S	313	282	107,438	105,745	520	481	533	600	632	548
Colonial	193	142	50,366	39,253	100	81	69	52	110	50
Continental	183	164	66,809	59,991	208	180	97	99	371	272
Delta	524	485	209,757	183,312	900	927	717	856	1,885	1,677
Eastern	2,208	1,999	998,113	966,384	4,885	4,376	3,560	3,784	9,114	5,730
Inland	85	73	31,349	26,352	117	107	64	55	126	82
MCA	340	313	100,284	93,517	313	296	217	187	353	275
National	297	166	169,025	90,506	541	326	588	586	1,385	705
Northeast	326	273	62,278	52,137	98	74	111	104	229	189
Northwest	734	616	421,578	326,465	2,541	2,197	1,657	1,730	4,643	2,546
TWA	1,414	1,242	938,702	853,380	8,786	8,871	4,878	5,886	12,035	9,999
United	2,179	1,939	1,275,218	1,160,401	10,386	9,195	6,403	7,222	23,727	19,807
Western	337	279	124,386	108,872	449	467	316	307	417	643
Totals	14,175	12,375	6,624,689	5,851,846	40,874	37,509	27,376	29,788	95,505	70,747

Delta's made-to-order

DC-6 Mid-Winter Schedules

Between

CHICAGO - MIAMI

WHERE YOU WANT TO GO - WHEN YOU WANT TO GO

3 DC-6's Daily

—from Chicago
Lv. 10:30 am—2:30 pm—4:15 pm

—from Miami
Lv. 8:00 am—11:00 am—4:45 pm

Plus The OWL Aircoach Every Night

Delta AIR LINES

made by all the 16 carriers, one of the better gains being that of Eastern, which flew 9,114,101 ton miles of freight last year, as against 5,730,243 ton miles the year before.

CAB Briefs

A request of **Continental Air Lines** for immediate exemption authority to serve Snyder, Texas, as an intermediate point between Lubbock and Wichita Falls, was denied by the Board. CAB said it would not be in the public interest to permit the operation before public hearings can be held. There has been no Board action yet on CAL's request to add the oil city as a permanent point on its certificated routes.

CAB has awarded a foreign air carrier permit to **Servicos Aereos Cruzeiro do Sul**, a Brazilian airline, authorizing scheduled service between points in Brazil, Trinidad, Puerto Rico, Dominican Republic and the U. S. co-terminals of New York and Washington.

Piedmont Aviation, Inc., has been authorized by the Board to serve Myrtle Beach, S. C., as an intermediate between Fayetteville and Wilmington, on a seasonal basis between May 1 and October 31.

Applications of **Bonanza Air Lines** and **Monarch Air Lines** for exemption authority to conduct immediate operations over the inactive feeder routes of **Arizona Airways** were denied by the Board. Both applications were filed prior to the recommendation of CAB Examiner James S. Keith that the proposed merger of Arizona and Monarch be approved.

All American Airways was given permission to discontinue service to Butler, Pa., until July 1, 1950, or until such time as an adequate airport is available.

Examiner William F. Cusick has recommended that **Pan American Airways** and **Pacific Northern Airlines** be certificated to operate between Seattle and Anchorage, Alaska, for a one-year period, with PAA being granted an extension of its Seattle-Juneau route to Anchorage and PNA an extension of its Anchorage-Juneau route to Seattle. He proposed that the carriers work out a through-service agreement with respect to operations between Seattle and Anchorage and the intermediate points now served by both, whereupon they would be exempted from the requirement of stopping at Juneau on flights conducted pursuant to the agreement.

The Board has authorized **United Air Lines** to provide free transportation for technical employes of 13 companies engaged in the manufacture and development of DC-4, DC-6 and Boeing Stratocruiser aircraft and their component parts.

An application for a foreign air carrier permit to conduct scheduled operations between points in Colombia and Miami via Havana has been filed with CAB by **Lineas Aereas Nacionales, S. A.**, of Barranquilla. Colombian terminal points named are Bogota, Barranquilla and Cartagena. DC-4 equipment would be used.

U. S. Airlines Operate 51% of World Mileage

U. S. certificated airlines, domestic and international, account for 51% of the world's scheduled plane miles, according to the latest edition of the "World Directory of Scheduled Common Carrier Airlines" issued by the Foreign Air Transport Division of CAB's Bureau of Economic Regulation.

This total of 51% represents a 1% decline in the six months from April 1, 1949, to October 1, and a continued percentage decline from previous years in U. S. flag carrier services compared with the world total. Almost all of the decline last year can be attributed to the 27% increase in miles scheduled per week attained by the Soviet Union.

A route-by-route analysis of airline operations shows that 62% of the miles scheduled by all foreign airlines are performed with American-manufactured aircraft, 34% with foreign-made aircraft, while 4% of the operations could not be specifically determined. When U. S. airlines are included, the proportion of the world's scheduled airline operations conducted with American aircraft becomes 81%.

The new edition replaces that of April 1, 1949. It lists 233 companies, of which 178 are foreign airlines and 55 are U. S. certificated airlines, including 16 Alaskan operators.

The following tabulation, compiled from the directory, shows the world's 25 largest airlines based on miles scheduled per week as of October 1, 1949. It should be noted that the top-ranking Civil Air Fleet Administration (Aeroflot) represents Russia's entire airline network, domestic and international. Thirteen of the top 25 are U. S. carriers.

Company	Miles scheduled per week	Unduplicated route miles
Civil Air Fleet Admin.—USSR	1,691,486	49,031
TWA	1,278,347	17,064
Pan American	1,235,766	55,997
American Airlines	1,166,902	8,038
United Air Lines	1,137,948	9,489
Eastern Air Lines	1,006,097	7,052
Air France	521,076	76,450
Northwest Airlines	496,794	16,688
KLM	491,334	67,390
BOAC	453,147	57,477
Capital Airlines	412,092	4,182
Trans-Canada	399,236	19,529
British European Airways	346,183	12,484
Australian National Airways	265,182	8,648
Scandinavian Airlines System	256,414	31,300
Braniff Airways	254,728	8,958
Delta Air Lines	253,153	3,065
Trans-Australia Airlines	245,925	10,586
National Airlines	208,643	2,745
Chicago and Southern	195,961	4,887
Mid-Continent Airlines	173,404	2,859
American Overseas	163,717	6,363
Cia. Mexicana de Aviacion	147,502	5,015
SABENA	144,576	33,319
Philippine Air Lines	142,286	22,642

Over the Counter

Sales Promotion

MID-CONTINENT AIRLINES is doing some smart advertising via television. In an interview-demonstration type show, it is stressing the industry's 1949 safety and dependability record and explaining how the Instrument Landing System has helped bring about improvements. Capt. Robert P. Harris, MCA's chief pilot, is featured in the 15-minute live telecasts, entitled "Behind the Cockpit Door." He uses a specially-rigged cross-point indicator to demonstrate an ILS landing before video cameras. Program has been televised in Kansas City and Tulsa and is scheduled for New Orleans, Omaha and Minneapolis.

E. M. Van Duzer, Eastern Air Lines' director of sales promotion, sends us three new EAL foldeds. One plugs Florida as a year-round vacation spot, another is entitled "There's No Substitute for Eastern's Experience," and the third calls attention to the fact that EAL's new Flying Fisherman and Flying Hunter 16-mm sound and color film is now available for showing . . . **United Air Lines** has issued a folder on its Stratocruiser service to Hawaii.

Not a sales promotion item, but of interest to advertising and promotion men is the fact that **Caribbean Atlantic Airlines** is now selling advertising space aboard its DC-3's. In each plane, Caribair has allocated 10 spaces (five on each side of the cabin, between the windows) approximately 13 inches high and 12 inches wide. Ads must be approved by the airline before insertion. The scheme is going well, says Caribair.

Passenger Service

THE NEW DC-6's that **SABENA Belgian Air Lines** will have in trans-Atlantic service by mid-year will furnish music at each seat. Miniature speakers are being installed in the back of each seat and the passenger can have recorded music by pressing a button in the arm.

Western Air Lines has streamlined its reinstated food service aloft so that aboard its Convairs one stewardess is now serving meals faster than two stewardesses formerly did. Two innovations: utilization of dishware made of melomene plastic, which in turn is set in plexiglas trays to make a light package for stewardess and passenger to handle; and use of refrigerated, air-tight aluminum containers to carry trays ready-to-serve except for hot dish and drink. Hot dishes go aboard in separate ovens, drinks in thermos containers, and are added to the trays in flight. One girl serves 40 Convair passengers and removes trays in 50 minutes against a former average of 75 minutes for two girls.

Traffic, Tariffs and New Services

SERVICE to Ocala and Gainesville, Fla., will be inaugurated by **Eastern Air Lines** on March 1 . . . **TWA** is offering summer camping and educational tours to Switzerland and various European countries at an all-expense rate of $1,260, starting June 20 . . . **Iberia,** Spain's national airline, plans to start regular Madrid-New York service before April 1 and also plans regular flights between Madrid and Cuba and Mexico . . . **LAMSA,** United Air Lines' Mexican affiliate, and Greyhound Lines have announced combination air-bus rates for travel between Mexico and the U. S., with exchange of passengers being made at El Paso and Nogales.

Eastern Air Lines and **National Airlines** on Feb. 19 added a second daily 4c per-mile coach flight New York-Miami. Flights stop at Washington and mark inauguration of Washington-Miami coach service. It also represents the first time NAL has entered Washington-New York coach market . . . **American Overseas Airlines** will start scheduled service to Bremen-Hamburg, Germany, about Mar. 1, through Fuhlsbuttel Airport. On Mar. 15 it will start service to Cologne-Dusseldorf, Germany, through Lohausen Airport . . . **Pan American World Airways** is offering a 15% discount for groups of 11 or more flying to the Central American and Caribbean Olympics in Guatemala City during the period Feb. 15 through Apr. 14. Discount applies only from Mexico, El Salvador, Nicaragua, Costa Rica, Panama, Columbia and Honduras, and is applicable on excursion or circle-trip fares as well as standard fares . . . Pan American is establishing San Salvador as its principal junction in Central America, replacing Guatemala City. A factor in the move was completion of San Salvador's new $300,000 terminal and other improvements at Ilopango Airport . . . **TWA** increases New York-Rome frequency to 17 round-trips weekly on Mar. 1. Further increases will be made in the spring until the summer peak of 30 round-trips weekly is reached . . . **Flying Tiger Line** has rented operations space at Philadelphia International Airport and will extend its air freight service to that city Mar. 1 . . . **Northwest Airlines** will start all-cargo service between New York and Seattle-Tacoma via various intermediate points on Mar. 10. Two converted DC-4's will be used.

American Airlines has opened a new ticket office in Washington, D. C., in the Willard Hotel, and has closed its office at 815 15th St. . . . **Pan American World Airways** has opened a new sales office in Hotel Grande, Managua, Nicaragua.

—ERIC BRAMLEY

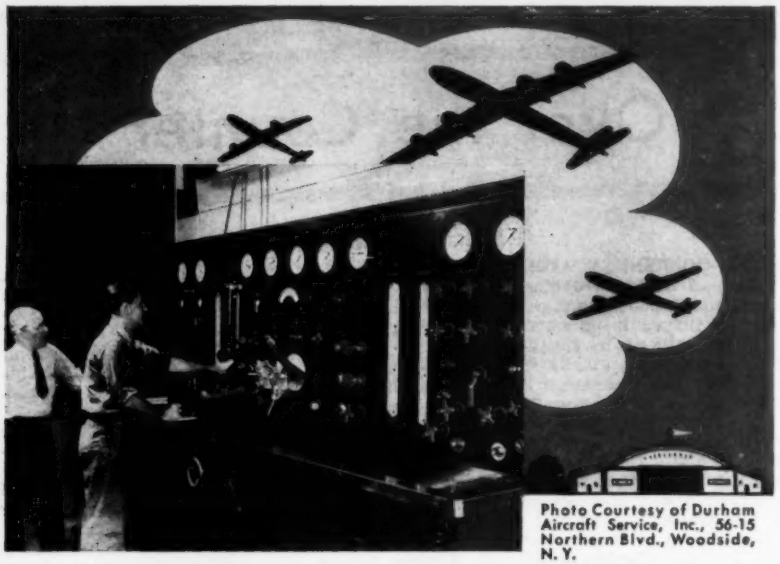


Photo Courtesy of Durham Aircraft Service, Inc., 56-15 Northern Blvd., Woodside, N. Y.

Aircraft fuel pump being tested on Greer Combination Fuel, Vacuum, Hydraulic Pumps and Accessories Test Machine Model FVHPA20-1H. Finger-Tip controls and accurate instruments are used to set up simulated flight conditions and to indicate quickly if pump is faulty or fit for flight. Mr. Kling shown at extreme left supervises test while an assistant records results.

THOUSANDS OF AIRCRAFT ACCESSORIES TESTED ON GREER EQUIPMENT BY DURHAM AIRCRAFT SERVICE

MR. JULIUS E. KLING
Mgr., Accessory Overhaul
Durham Aircraft Service, Inc.
Woodside, New York . . .

"The need for complete reliability in modern test equipment for checking aircraft instruments and accessories in our shops caused us to use Greer Test Equipment. This enables us to render the exacting kind of service which our customers require."

Durham Aircraft with bases at Woodside, L. I., (its headquarters); and Idlewild Airport; Windsor Locks, Conn.; Pittsburgh, Pa.; and Tulsa, Okla. is one of the fastest growing and most completely equipped aviation service organizations. It's small wonder that in selecting test and maintenance equipment, they chose the world's finest.

Leading airlines and service organizations have discovered that at Greer, under one roof, they have available a complete line of standard and specialized machines to test all aircraft systems and accessories for all aircraft big or small.

We at Greer are eager to discuss your particular maintenance problems. A request for information on your company letterhead will bring an immediate reply. Write Now!

OTHER GREER TEST MACHINES FOR
Hydraulic Systems • Electrical Systems
Lubrication Systems • Vacuum Systems
Synchronizer Systems • Fuel Systems
Accessories & Instruments
Heating & Ventilating Systems
Air Conditioning Systems
Turbo-Jet Engine Accessories
Cabin Supercharger Systems
Propeller Governor Systems
• • •
Special Machines to Your Specifications

YOUR SYMBOL OF SERVICE
GREER
HYDRAULICS INC.
454 EIGHTEENTH ST., BROOKLYN 15, N. Y.

People

ADMINISTRATIVE

Edwin A. Link, president of Link Aviation, of Binghamton, N. Y., and **Joel H. Carroll,** Elmira businessman, have been elected to the board of directors of Robinson Airlines. Not re-elected to the board was Mrs. D. H. Robinson, wife of the founder.

William Deswarte, formerly assistant to the president of SABENA Belgian Air Lines, has been named general manager, succeeding **Tony Orta,** who has retired from full-time duties and become a counsellor to the company. The board of directors conferred on Orta, a pioneer in Belgian aviation, the title of "honorary director-general manager."

OPERATIONS-MAINTENANCE

Ralph D. Rhea, Atlantic Division superintendent of communications for Pan American World Airways since June, 1948, has been named to the new post of manager-ground operations. In addition, he will represent the operations manager during his absence from La Guardia Field. The communications post has been taken over by **Robert P. Dutton,** who joined PAA as a flight radio officer in 1937 and since 1942 had been assistant division communications superintendent.

TRAFFIC & SALES

Norval B. Rader has resigned his post of eastern regional manager of traffic and sales for United Air Lines, effective March 6, to accept a position as special representative for a Chicago business firm. He has been with UAL 20 years.

George Willard has been promoted from chief purser to superintendent of passenger service with Piedmont Airlines.

Callons D. Kennard, formerly sales representative for National Airlines in New Orleans, has been named district sales manager in Mobile and the Gulf Coast.

Don B. Wilson, formerly district traffic and sales manager for United Air Lines at New York, has been promoted to the newly created position of superintendent of agency and interline sales, in which capacity he will be assisted by **Karl P. Hughes.** Also involved are the following personnel changes: **Jack Misselhorn,** formerly in charge of the Detroit office, becomes district sales manager at New York; **Malcolm W. Stevenson,** formerly head of the Chicago sales office, succeeds Misselhorn at Detroit; **Clyde Doran,** formerly district traffic and sales manager at Washington, moves to the

Wilson

Chicago sales post; **J. B. Miller,** formerly in charge of Sacramento sales, goes to Washington; **Sterling Nelson** moves from the Los Angeles traffic staff to head the Sacramento office.

Smith

C. L. Smith, a member of the advertising firm of Ruthrauff & Ryan, Inc., since 1940 and account executive on the American Airlines account since 1948, has been elected to the board of directors of the advertising firm. His aviation background, dating back to 1930, includes experience with Southern Air Transport Corporation, Embry-Riddle Aviation Corp. and Universal Aviation Corporation.

J. R. Haymond, who left United Air Lines, traffic department two years ago to go into the oil business, has returned to air transportation as assistant to **Peter Tornqvist,** manager of Scandinavian Airlines System's office in Los Angeles.

Gerald R. O'Brien, formerly sales representative for Delta Air Lines in Atlanta, has transferred to Savannah as sales manager, succeeding **John Connelly,** resigned. **John R. Robinson,** formerly sales manager at Chattanooga, has transferred to Augusta as sales manager.

George L. Strehlke, former district sales manager for Pan American World Airways in Chicago, has been appointed central regional sales manager. He succeeds **Herbert F. Milley,** recently made Pacific-Alaska division traffic and sales manager.

George Alexander, formerly district traffic manager for Northwest Airlines at Tokyo, has been named district traffic manager in charge of the new traffic office in Osaka.

Howard R. Fatheree has been appointed district traffic and sales manager for Pioneer Air Lines in Houston.

Stephen Noble, American Airlines sales representative in Washington, is on loan to the Air Transport Association until July 1. He has been assigned to the Air Force transportation office to act as liaison between AF and ATA.

L. G. (Buzz) Cunningham, Western Air Lines station manager at Ontario International Airport, has been designated to act also as sales manager for the tri-county valley area served by the airport. **Robert Vernon,** who has been acting sales manager in the area, has gone to the district sales office in Los Angeles on special assignment.

James J. White, former Eastern Air Lines traffic and sales representative in New York, has been promoted to Chicago regional cargo sales manager.

Airline Commentary

By Eric Bramley

WE HAVE received from about four different sources the set of rules printed below. It's one of those things that gets started in the airline business, is passed from person to person, changed, enlarged, revised, etc. It has had at least three different titles: "Notice to Passengers," "Notice to Passengers on Non-Scheduled Airlines," and "Notice to Passengers of Air Coach Airlines." The original author is unknown to us. We have taken all the versions and combined them (and cleaned them up a bit). Here it is:

1. Keep your damned feet off the seats.
2. Don't get snotty with the crew—remember, your pilot is still learning to fly.
3. Keep your damned feet off the seats.
4. Don't forget to leave a large tip for each crew member.
5. If a fellow passenger gets anxious, knock him on the head with an empty grog jug.
6. Eyes forward at all times.
7. Only eight people allowed in the men's room at one time.
8. Keep your damned feet off the seats.
9. Don't ask embarrassing questions of the crew, such as: "Who made that damned landing?" "Where are we?" "What time will we land?"
10. If you don't like the food it's just too bad.
11. Be thankful if you arrive anywhere.
12. Keep your damned feet off the seats.
13. Don't bother the stewardess. She is along for the ride also. Besides, who is to entertain the crew? Not you with your stupid questions.
14. Save your gum after each landing for the next one. If it falls off your ear, stick it under the seat.
15. Always let the crew leave first—the damned thing might catch fire.
16. Don't be so inconsiderate as to ask for magazines, papers or playing cards until the crew is finished with them.
17. Shut up and keep your damned feet off the seats.
18. By all means don't be so stupid as to get airsick. At least wait until you are off the plane.
19. Don't expect the coffee to be hot. It never is.
20. And—keep your damned big feet off the seats, *please.*

•

Rex Brack, Braniff Airways' general traffic and sales manager, writes us as follows: "Since there's no criticism as searching as self criticism, we think our own managerial and administrative staff is best qualified to offer suggestions for improvement of our service. Therefore, we request every Braniff staff member who takes a business trip to file a short report of observations and suggestions. This is made easy for him. We restyled our expense report form so that the treasury department, when making payment, detaches a perforated report slip and sends it to my office. One of the nicest things about this reporting is the compliments our critics record." A darned good idea, Rex, that could be more widely adopted.

•

It's been said that the airline business is a gamble, but this the first time we've heard of anyone gambling his way into the business. In Australia, Mr. H. W. Dedman, who had been a RAAF navigator during the war and who was working as an office clerk, went out to the Melbourne racetrack. He had two Australian pounds, equal to $4.48. He bet on the first race and won, put all his winnings on the second, and continued successfully through several events. When the smoke cleared away he had 20,000 pounds, or $44,800. Out he went, bought three Avro-Anson planes in association with two former RAAF colleagues, and started Bass Islands Airways Ltd. He'll operate daily flights carrying vegetables and other goods between Melbourne and King Island. That's one way to start an airline, but our advice is—don't try it.

U. S. Domestic Airline Traffic for December

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON-MILES **	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%									
American	206,736	102,914,000	185,065,000	55.61	1,092,374	687,022	3,542,664	15,465,064	26,525,478	58.30	4,572,902	4,616,970	96.20
Braniff	40,950	13,986,000	30,170,000	46.36	122,443	95,799	141,981	1,699,118	3,714,360	45.74	911,273	961,501	93.72
Capital	82,596	26,329,000	55,541,000	47.40	130,026	210,342	785,468	3,639,524	7,152,854	50.88	1,557,829	1,638,512	88.78
Caribbean	5,394	436,000	1,126,000	38.72	1,264	. . . .	2,810	39,575	108,077	36.62	48,978	49,747	98.00
C & S	20,046	6,948,000	15,397,000	45.13	54,217	48,573	65,266	835,056	1,796,394	46.49	555,557	604,728	91.29
Colonial	11,252	2,974,000	6,122,000	48.58	12,388	7,922	9,493	329,314	796,861	41.33	290,081	307,672	92.43
Continental	13,302	4,843,000	12,916,000	37.50	22,290	11,041	32,971	529,868	1,366,300	38.78	462,348	461,280	97.90
Delta	37,799	16,752,000	36,470,000	45.93	122,831	90,125	266,987	2,034,551	5,051,845	40.27	1,120,022	1,215,395	91.54
Eastern	155,796	79,491,000	169,219,000	46.98	572,886	472,032	1,087,822	10,410,977	24,508,233	42.49	4,540,178	4,743,775	92.36
Hawaiian	24,950	3,295,000	5,326,000	61.87	10,387	12,684	46,961	347,410	586,611	59.22	240,628	190,577	98.44
Inland*	6,399	2,344,000	4,454,000	52.63	12,301	6,916	10,749	253,639	456,554	55.56	231,078	239,940	96.31
MCA	24,436	7,194,000	14,212,000	50.62	33,883	26,279	42,205	791,154	1,624,198	48.71	676,749	704,630	93.81
National	25,972	15,956,000	36,163,000	44.12	68,610	79,700	232,869	2,014,334	5,030,439	40.04	990,036	961,679	94.51
Northeast	19,076	3,775,000	10,141,000	37.23	16,610	22,603	19,327	408,486	1,023,571	39.91	316,229	341,128	88.10
Northwest	52,754	33,186,000	69,230,000	47.94	340,206	187,330	586,405	4,376,755	8,539,475	51.25	1,676,928	1,678,170	92.97
Trans Pac.	6,801	879,000	2,306,000	38.12	. . . .	230	2,797	73,531	194,557	37.79	82,360	65,937	95.69
TWA	92,860	60,950,000	113,694,000	53.61	946,306	536,485	1,135,903	8,467,550	14,692,051	57.63	3,499,674	3,628,475	91.26
United	135,870	80,982,000	148,468,000	54.55	1,318,396	806,774	2,347,227	12,222,919	23,466,577	52.09	4,172,508	4,221,160	94.12
Western*	31,244	12,278,000	27,219,000	45.11	86,088	42,570	43,222	1,343,999	2,843,339	47.27	666,405	610,426	95.98
TOTALS	994,233	475,512,000	943,239,000	50.41	4,963,506	3,343,117	10,343,127	65,282,824	129,477,774	50.41	26,611,763	27,241,702	93.27

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Includes air parcel post.

U. S. Domestic Airline Traffic for 1949

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON-MILES ***	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%									
American	3,227,178	1,908,058,000	2,328,302,000	64.77	8,885,757	5,578,531	31,845,434	192,072,941	323,134,540	59.44	56,047,712	55,684,045	98.09
Braniff	593,504	199,628,000	378,851,000	52.69	1,072,642	832,518	1,174,865	22,233,420	46,092,130	48.27	11,519,908	11,622,397	97.71
Capital	1,215,672	361,700,000	707,292,000	51.13	1,066,534	1,747,605	7,450,410	44,816,734	90,931,386	49.28	20,747,703	20,589,495	96.37
Caribbean	78,845	5,899,000	14,388,000	40.99	8,122	. . . .	31,894	514,524	1,325,299	38.79	565,960	611,409	97.06
C & S	313,603	107,438,000	201,600,000	53.29	520,462	533,995	632,951	11,994,553	23,474,942	51.09	7,497,306	7,646,236	96.84
Colonial	193,339	50,366,000	84,974,000	59.27	100,194	69,354	110,397	5,276,110	11,086,344	47.59	4,044,090	3,971,871	97.22
Continental	183,693	66,809,000	160,515,000	41.62	208,231	97,881	371,964	7,074,992	16,779,308	42.15	5,764,803	5,734,094	98.79
Delta	524,476	209,757,000	383,354,000	54.71	900,582	717,372	1,885,917	23,683,955	53,060,380	44.63	13,001,216	13,247,443	97.59
Eastern	2,208,617	998,113,000	1,802,050,000	55.38	4,885,959	3,560,551	9,114,101	120,601,718	261,295,025	46.15	53,135,027	53,895,360	97.27
Hawaiian	304,402	41,421,000	63,070,000	65.67	62,097	124,149	599,559	4,273,228	7,038,586	60.71	2,888,912	2,378,350	98.14
Inland*	85,098	31,349,000	54,273,000	57.76	117,232	64,736	126,815	3,312,875	5,653,511	58.58	2,748,858	2,812,140	97.43
MCA	340,840	100,284,000	179,330,000	55.92	313,465	217,395	353,288	10,490,484	19,999,128	52.45	8,541,240	8,596,022	97.71
National	297,743	169,025,000	376,304,000	44.91	541,060	588,466	1,385,367	19,742,270	52,564,994	37.55	10,219,015	10,186,239	98.07
Northeast	326,031	62,278,000	128,537,000	48.45	98,200	111,122	229,966	6,085,947	12,948,699	46.99	4,021,226	4,115,928	93.56
Northwest	734,107	421,578,000	743,941,000	56.66	2,541,263	1,657,866	4,643,245	49,671,054	93,167,149	53.31	19,245,273	18,970,501	97.24
Trans Pac.**	48,514	6,889,000	17,090,000	40.31	. . . .	285	16,359	516,299	1,531,965	33.70	614,847	513,913	95.42
TWA	1,414,578	938,702,000	1,543,314,000	60.82	8,786,206	4,878,633	12,035,978	115,899,642	196,611,285	58.94	49,492,451	49,378,714	96.43
United	2,179,880	1,275,218,000	1,875,988,000	67.97	10,386,738	6,403,978	23,727,149	162,823,256	284,072,935	57.31	52,650,126	52,273,669	97.65
Western*	337,095	124,386,000	245,232,000	50.72	449,663	316,588	417,662	13,069,947	26,380,549	49.54	6,747,120	6,434,616	97.83
TOTALS	14,607,215	6,678,898,000	11,288,405,000	59.16	40,944,407	27,501,025	96,153,321	814,153,949	1,527,148,155	53.31	329,492,793	328,662,442	97.34

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Began certificated operations June 6, 1949
*** Includes air parcel post.

Alaskan Airline Traffic, January-June

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%									
Alaska	17,162	27,831,000	39,057,000	71.25	70,004	11,572	3,049,365	6,207,486	10,914,529	56.87	1,939,179	260,894	94.21
Alas. Coast	8,955	799,000	1,490,000	53.62	9,553	5,074	7,320	95,295	188,461	50.56	243,834	197,188	84.65
Cordova	1,072	82,000	216,000	37.96	1,490	. . . .	2,635	13,069	23,518	55.57	62,814	42,591	67.55
Ellis	11,111	665,000	1,394,000	47.70	2,534	4,545	. . . .	70,950	139,344	50.91	184,769	129,786	91.32
N. Consol.	4,151	855,000	2,685,000	31.84	44,757	1,546	64,453	200,512	379,331	52.85	357,134	256,023	96.26
Pac. North.	9,074	3,845,000	8,789,000	43.74	41,539	73,528	. . . .	489,155	1,053,785	46.43	438,597	332,474	97.42
Reeve	1,072	649,000	1,674,000	38.76	44,967	. . . .	47,975	165,483	303,750	54.48	144,386	114,099	89.73
Wien Alaska	1,813	476,000	1,440,000	33.05	9,294	. . . .	69,797	128,010	210,122	60.92	373,946	239,539	75.20
TOTALS	54,410	35,202,000	56,745,000	62.03	224,138	96,265	3,241,545	7,369,960	13,212,840	55.77	3,744,659	1,572,594	89.82

U. S. International Airline Revenues & Expenses for November

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	U. S. MAIL REVENUES	FOREIGN MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	$ 277,728	$ 229,903	$ 7,740	$ 5,565	$	$ 19,183	$ 3,635	$	$ 310,170	$ 171,035	$ 139,135	$ -32,442
Amer. O'Seas	1,531,778	927,188	358,388	89,439	109,682	. . . .	16,571	24,500	1,938,228	1,009,075	929,153	-406,450
Braniff	343,658	192,933	132,457	1,806	. . . .	9,655	5,546	. . . .	367,931	173,741	194,190	-24,273
C & S	282,410	135,838	124,389	1,111	. . . .	9,430	4,544	. . . .	293,573	160,211	133,362	-11,163
Colonial	68,471	41,073	25,912	380	. . . .	431	133	. . . .	118,201	53,821	64,380	-49,730
Eastern	74,954	40,167	4,789	. . . .	. . . .	6,027	372	23,598	73,724	36,141	37,583	1,230
National	71,913	61,849	-1,416	. . . .	9,295	. . . .	2,008	176	93,039	36,315	56,724	-21,126
Northwest	1,045,246	374,031	484,321	25,515	2,035	146,700	7,933	. . . .	833,131	375,876	457,255	212,115
Panagra	Figures not yet available. Data will be reported at a later date.											
PAA												
Latin Amer.	5,377,336	2,672,282	1,825,842*	159,664	590,827	. . . .	79,540	40,167	5,131,043	2,307,081	2,823,962	246,293
Atlantic	5,131,043	1,849,494	2,764,136*	171,039	290,506	. . . .	42,690	19,671	4,459,441	2,463,484	1,995,957	671,602
Pacific	3,069,817	1,054,084	1,719,298*	99,634	169,171	. . . .	17,296	. . . .	2,845,037	1,585,302	1,259,735	224,781
Alaska	414,669	154,358	178,775*	. . . .	81,583	. . . .	1,029	. . . .	388,936	187,258	201,678	25,734
TVA	2,651,746	1,340,099	766,497	239,153	191,967	. . . .	51,285	35,504	2,951,909	1,493,657	1,458,252	-300,163
United	261,150	196,220	41,017	. . . .	12,256	. . . .	1,099	. . . .	320,384	179,091	141,293	-59,233
TOTALS	20,601,919	9,269,519	8,432,145	793,306	1,457,322	191,426	233,681	143,616	20,124,747	10,232,088	9,892,659	477,175

* Represents company's estimate of amount which should be received in accordance with the terms of the Civil Aeronautics Act when permanent rates are established. Estimate exceeds temporary rates in effect by:
Latin American Div. $1,470,135; Atlantic Div. $1,955,045; Pacific Div. $1,089,793; Alaska Div. $76,867

NOTE: Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

Alaskan Airline Revenues & Expenses, January-June

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
Alaska*	$ 1,034,179	$ 64,644	$ 84,918	$ 19,976	$ . . .	$ 1,518	$ 855,363	$ 1,055,454	$ 668,830	$ 386,623	$ -21,274
Alaska Coastal	235,586	127,573	64,379	9,404	5,067	3,100	22,508	238,592	112,523	126,068	-3,006
Cordova	39,773	17,883	8,888	. . . .	6,612	435	5,788	44,946	22,156	22,790	-5,173
Ellis	176,951	99,826	52,781	13,120	. . . .	1,582	8,610	223,385	82,071	141,314	-46,434
Northern Consol.	349,069	110,406	160,683	1,644	40,534	1,210	27,066	397,422	221,801	175,621	-48,353
Pac. Northern	654,727	343,592	191,897	38,707	. . . .	6,982	71,687	774,130	393,362	380,768	-119,404
Reeve	156,765	49,277	45,921	. . . .	28,869	535	31,621	193,805	127,936	65,869	-37,040
Wien Alaska	397,248	53,116	270,340	. . . .	57,344	. . . .	14,617	303,876	180,934	122,942	93,372
TOTALS	3,044,298	866,317	879,807	82,851	138,426	15,362	1,037,260	3,231,610	1,809,613	1,421,995	-187,312

* Figures for Alaska Airlines are for the Quarter ending March 31, 1949, since later figures are not available.

Alaskan Airline Balance Sheet Data as of June 30, 1949

AIRLINES	TOTAL ASSETS	CURRENT ASSETS	INVESTMENTS & SPECIAL FUNDS	OPERATING PROP. & EQUIPMENT	DEFERRED CHARGES	CURRENT LIABILITIES	LONG-TERM DEBT	DEFERRED CREDITS	OPERATING RESERVES	CAPITAL STOCK	SURPLUS
Alas[illegible]	$ 4,381,531	$ 2,122,148	$ 2,010	$ 1,909,644	$ 337,884	$ 1,603,796	$ 2,377	$ 11,088	$ 79,759	$ 597,153	$ 2,087,358
Alas[illegible] Coastal	402,503	120,310	4,557	256,402	14,460	61,912	167,180	9,768	23,950	147,943	-8,250
Cord[illegible]	106,623	55,185	. . . .	47,557	3,880	82,323	3,000	16,947	336	7,650	-3,633
Elli[illegible]	310,263	64,310	. . . .	211,940	14,137	67,211	86,424	. . . .	. . . .	48,796	107,832
Nort[illegible] Consol.	781,130	342,155	209	285,220	49,489	573,157	46,120	44,905	. . . .	320,000	-203,053
Pac. [illegible]rthern	1,216,046	585,143	. . . .	411,220	74,647	466,304	23,479	81,401	. . . .	665,777	-20,915
Reev[illegible]	397,155	99,808	. . . .	240,150	18,888	159,223	. . . .	26	. . . .	288,135	-50,229
Wien [illegible]aska	540,130	327,269	1,695	203,582	7,585	322,259	51,600	. . . .	8,695	107,100	50,476
TOTA[illegible]	8,135,381	3,716,328	8,471	3,565,715	520,970	3,336,185	380,180	164,135	112,740	2,182,554	1,959,586

* Figures for Alaska Airlines are as of March 31, 1949, since later figures are not available.

(PHOTO COURTESY OF TRANSWORLD AIRLINES)

A Good Sign to Fly to...

Ciampino Airport is the arrival and departure point for thousands of persons visiting Rome and Vatican City on Special Flights for Holy Year. Many of the international airliners serving Rome rely on Esso Aviation Products and services. Esso Aviation Products are constantly being developed and improved by research to meet the ever-changing requirements of modern aviation. The Esso winged oval symbolizes products of uniform, controlled quality backed by more than 40 years of aviation experience.

**At Ciampino Airport and throughout Italy, the marketer of Esso Aviation Products is Standard Italo Americana Petroli.*

ESSO EXPORT CORPORATION, AVIATION DEPARTMENT, 25 BROAD STREET, NEW YORK 4, N.Y.

AIRPORTS
Including Features Formerly in AIRPORTS AND AIR CARRIERS Magazine

Three-Way Development:

Non-Aviation Activity Heads Surplus Airport for Success

By Fred S. Hunter

In a year and a half's time, the total annual payroll of the Bisbee-Douglas (Ariz.) International Airport has grown from $34,000 to $400,000, and the airport's management feels hopeful that the latter figure may be doubled by the end of this year.

It probably would be stretching the point to contend that this border airport represents a good example of diversified commercial development of a surplus airport. It has to be called an unusual example. But it does demonstrate what can be done by sound planning.

Bisbee-Douglas has the advantage of being a big airport. The shortest of its seven paved runways is 7,100 ft. long and three sections of paved ramp stretch out for a mile and a half. There's plenty of room. The total of 3,842 acres, for example, offers the wholly uncommon opportunity to rent out a section to an adjoining cattle ranch.

On the other hand, the sum total of accessible population would fall short of filling any self-respecting football stadium, a factor imposing definite limitations on potential aviation revenues. American Airlines puts one daily DC-6 schedule in each direction into Bisbee-Douglas.

The point also is included in the certificate awarded to Arizona Airways and the latter carrier's merger with Monarch Air Lines will add probably two additional schedules a day in each direction by the expanded feeder operator. Bisbee-Douglas, it can be seen, will never get rich on landing fees from airlines.

Self-Sufficiency Near

Non-aviation income accounts for 82% of the total revenue of the airport. This isn't the balance the airport commission and the airport's manager, Grant W. MacCurdy, expect ultimately to achieve. About 50-50 is their idea, but non-aviation revenues can be developed more quickly and after the non-aviation facilities are filled up the aviaton end can be rounded out. It wasn't expected, incidentally, that the airport should be made self-supporting immediately. But indications are that it will do a lot better than most airports and be self-supporting by the end of this year, or in about two and a half years of operation.

Twenty-two miles southeast of Bisbee and 11 miles north of Douglas, the former Douglas Army Air Base in August of 1947 was staffed by a War Assets Administration engineer and a small fire guard, when Cochise County decided to find out if it might have possibilities. The county asked MacCurdy, who had gained considerable reputation in the southwest for his successful operation of the airport at Prescott, Ariz., to make a survey.

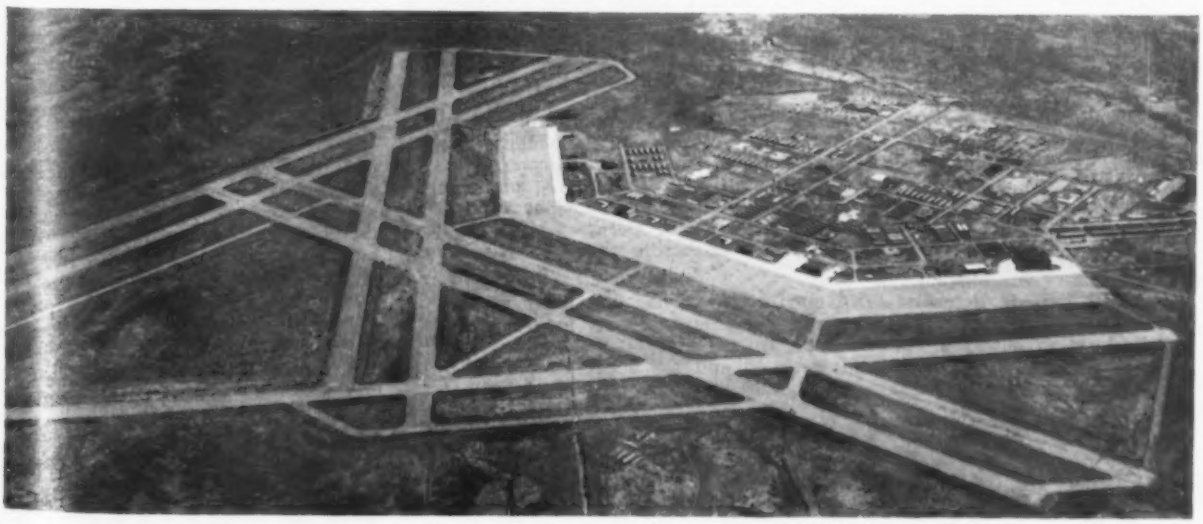
MacCurdy went to work and in completing the survey recommended a three-way development: (1) aviation activities; (2) non-aviation industrial utilization of "off-the-line" buildings; (3) recreation area for the people of the county.

Hires Man With Plan

Cochise County bought MacCurdy's recommendations, and took over the surplus airport in September, 1948. It also hired MacCurdy and made him airport manager. So far the development has followed the original survey.

Here's the lineup in The Bisbee-Douglas Airport's industrial area:

1. Canyon State Cannery. Uses two warehouses on the rail siding. In company's first season it canned spinach, green chili, tomatoes and sweet pota-



AIRPORT DIVERSIFICATION makes Bisbee-Douglas (Ariz.) International Airport an airport, a manufacturing district, a recreation area and a farm. Income from all activities is expected to make the former surplus airport self-supporting this year, two and a half years after post-war development started. Shortest of seven runways is 7,100 feet long.

Airport News Digest

•**San Francisco's Public Utilities Commission** has consolidated all public ground transportation from the city's airport under one company by approving a vehicular ground transportation agreement between Fialer's Limousines, Inc., and the Airport Department. Fialer's will pay the airport a graduated scale of 5% to 15% of its gross revenues or a minimum of $1,350 per month, whichever is greater. Stricter control by the PUC and better service for the public are the expected results.

•**A master plan** for development of Reading (Pa.) Municipal Airport, completed recently by Leigh Fisher and Associates, urges the creation of an Airport Authority to operate the field and calls for the construction of a modern terminal building at a cost of $243,000. All improvements and construction called for in the report will cost $742,500.

•**New appointees to the airport committee** of the National Safety Council include: George M. McSherry, superintendent of New York International Airport; Woodruff De Silva, manager of Los Angeles International; and Ray Matucha, in charge of ground service for United Air Lines at Chicago. The committee will seek to develop adequate ground traffic rules for airports and will consider standardization of rules for handling of aircraft fuel and rules governing emergencies.

•**An association for the removal** of the Detroit City Airport is circulating petitions (it needs 26,000 signatures) calling for discontinuance of the airport's operations and subsequent conversion of the property to recreational, educational or housing use. It demands Common Council action or, that failing, a general referendum on the next city ballot. About 300 planes are based at the field, which the petitions describe as a "menace to the community."

•**Plans for development of Parks Metropolitan Airport** as a second major airport for St. Louis, after being dormant for some weeks, came to life again in February when Oliver L. Parks announced that his company was planning to subdivide the 568-acre airport site and develop it into a low-cost housing and industrial site. Parks turned to the real estate proposal after the airlines serving St. Louis said they would prefer construction of an express highway to Lambert-St. Louis Municipal Airport instead of continuing with plans to develop the Parks site. Committees were hurriedly named to rush a survey of the Parks field and its possibilities for expansion into a major air terminal.

•**San Antonio City Council has offered** to build a new hangar for Slick Airways, which is having to vacate its present facilities to make way for the foreign trade zone soon to be into operation at the Municipal Airport there. If Slick accepts the offer, his company will pay $4,800 a year rental for the hangar.

•**An improvement project at Palmdale Airport,** halted earlier this year by the Los Angeles County board of supervisors, has now been given a green light. The proposed terminal building will be scaled down, however, from a cost of $300,000 to around $80,000. The field is about 70 miles from Los Angeles on the other side of the mountains.

• **The Port of New York Authority reported** that operating deficits totaling more than $400,000 were incurred last year in its operations at La Guardia Field, New York International and Newark Airport. The combined loss at La Guardia and Idlewild was $102,709, as compared to a loss in 1948 of $436,312, and was less than anticipated. The Newark loss was $298,853. Gross operating revenues of the two New York fields for the year amounted to $2,901,068, while those at Newark were $668,356.

• **Mayor Otto H. Peters of Williamsville, N. Y.,** has threatened to start court action to close the Buffalo Airport unless the city moves it to a new location within a year. The protest is based on the "unbearable" noise of planes operating from the field and the supposed danger of planes crashing into Williamsville homes.

• **Airways Engineering Corp.** of Washington are preparing a new master plan for the development of the terminal area of the Detroit-Wayne Major Airport . . . Cleveland is preparing to accept a $100,000 Federal-aid airport grant for further improvements to its lakefront airport . . . The air traffic control tower recently "retired" from service at Teterboro, N. J., airport is to be moved in the spring to the Morristown, N. J., airport.

toes grown in the Sulphur Springs Valley north of the airport.

2. **The Inland Trading and Construction Co.** It originally came to the airport to demolish 400 temporary buildings. It has leased two warehouses and moved its main offices into one of them.

3. **The Par, Inc.** Leased two cold storage plants where they process, quick-freeze and store shrimp and other fish from the Gulf of California. Can process eight tons of fish per day.

4. **Flying H. Poultry Co.** Has installed a processing plant for freezing fried chicken. (Much of this, incidentally, is handled by air delivery in lightplanes.

5. **Sky Ranch.** An airport apartment project which has completed eight three-room-with-bath overnight accommodations for tourists. Saddle horses are available at the ranch.

6. **El Recreo Club.** Former Officers' Club has been converted into a dinner club and cocktail lounge. With the largest and most attractive swimming pool in the southwest, this attracts many visitors.

Negotiations are now in progress with several other business, ranging from a large hatchery to a broom factory. And in addition to the corner of the airport property leased to the cattle ranch, MacCurdy is dickering with others on agricultural area rentals. Two are for raising chickens and one for raising produce, using one of the water wells not now being run.

Has Recreation Area

The Bisbee-Douglas Airport's recreational area contains picnic grounds for groups ranging in size from church picnics of 40 or 50 people to the Elks Club with an attendance of 3,000. The County Fair is housed in two hangars. The Cochise County Little Theater group has leased the former Post Theater and plays to full houses.

The Air Scouts and the Boy Scouts have their own buildings, converted from old parachute loft and a former shop. The Rifle Club is completing a .22 bore range for matches which will have a covered firing point. The former Army base's south chapel, fully equipped, serves residents on the airport with Sunday evening services.

In developing the aviation facilities, the old air base's Arms and Instrument building has been remodeled into one of the outstanding air terminal buildings in the west. Here are offices for American Airlines, Monarch Air Lines (soon to serve the airport as result of Arizona Airways merger), CAA communications, U. S. customs, immigration, agriculture and health departments—the airport having been designed a port of entry last July—and for such future prospects as Aeronaves de Mexico (seeking to come in from Agua Prieta across the border) and a group organizing a resort airline to fly package tours for vacationists, fishermen and hunters to La Paz, Baga California. A

modern coffee shop also is in the terminal building.

Lightplane Builder

Harold Emigh have moved manufacture of his all-metal 90-hp Trojan from Norwalk, Calif., to Bisbee-Douglas and has turned the first four-place ship out of the 162' x 150' shop he has leased at the airport. Sky Fresh Products, organized to fly fresh tomatoes out of Baja California, is a Bisbee-Douglas Airport tenant in a hangar which accommodates the C-46's it used. This company has been reorganized, J. Prescott Blount having returned to Mill Valley, Calif., and the operation taken over by J. Woodley Smith, Jr.

Fixed base operation at Bisbee-Douglas is conducted by Orlando Miller under the name of Skyriders and is located in one of the seven hangars on the line. Miller has trainers and rental planes and a modern shop equipped to handle planes up to and including multi-engine equipment.

Bisbee-Douglas has one third of the ramp left with three large hangars and other buildings which MacCurdy hopes will attract a division of a large aircraft company wishing to decentralize. He points out that at 4,100 ft. altitude the weather at the airport is such that all-year comfort is offered for workers. He adds that it is the only airport along the border between El Paso and San Diego that has open approaches to unlimited facilities.

Airport People

John R. Wiley, formerly director of the planning and controls division of American Airlines, has been named deputy director of the department of airport development of the Port of New York Authority. In the newly created position, Wiley will assist **Fred M. Glass,** director, in planning and development of the four NYPA airports.

Wiley

Matthew J. Noonan is the new public relations director for the Massachusetts State Airport Management Board, succeeding **Joseph B. Kelley,** resigned . . . **Daniel E. Anderson** was top man in a civil service competition for the post of public relations director for the Los Angeles City Department of Airports.

Howard S. Cullman has been elected to his fifth consecutive term as chairman of the board of commissioners of the Port of New York Authority. **Austin J. Tobin** was re-elected executive secretary, a post he has held since 1942, while **Joseph M. Byrne, Jr.,** was elected to his fifth term as vice chairman and **Leander I. Shelley** was renamed counsel.

Airport Accounting System Pinpoints Operating Figures

By WILLIAM D. PERREAULT

Slowly but surely airports are finding where they are headed financially. There appears to be no great desire to get rich quick nor to charge off public utilities at the expense of the operator. Its been difficult to prove the intent or detail of airport financing in past years but some major strides are being made.

At the present time the accounting firm of Ernst & Ernst, with main offices in New York, is setting up a system of airport accounting for the Port of New York Authority. The Port Authority knows pretty well what it is getting. Ernst & Ernst has already set up accounting systems for the Municipal Airport Commission at Minneapolis-St. Paul and also at Cleveland. And results are starting to show.

It all started in Minneapolis-St. Paul in 1945 when Robert Aldrich, executive director of the MAC, called in Ernst & Ernst to set up a system of accounting directly applicable to operations at Wold-Chamberlain Field, Holman Field and the other smaller airports controlled by the Commission. Ernst & Ernst is particularly qualified to handle a project of this type since it has dealt in major airline accounts for some time and is thoroughly familiar with the systems which will be used as a basis of comparison by the operators in determining the fairness of airport charges.

E&E sent Harley Reece into the MAC offices where he spent three months working over the details of the airports operations and determining all sources of revenue and what expenses were incurred in regular operations. This was used in formulating a basic code system to which every item of income and outgo could be charged. An important aspect of this code is that it is freely expansible.

Flexible System

What information was of use to airport management? Studies of the operation and the manner in which charges were and should be made brought about standard forms on which the vital statistics could be recorded in a manner which met the airport needs of today. The flexibility of the system is a major factor since it can be expanded or contracted to meet new requirements and the forms can be modified to meet equivalent needs.

Ernst & Ernst found that the major departments involved in airport operation at Minneapolis-St. Paul were administrative, the administration buildings, field and runways, public areas, hangars, garages, restaurant, newsstand, popcorn, airport buildings and equipment, temporary buildings, and equipment maintenance. After establishing each of these departments as an entity, E&E divided these groupings into detailed accounts of income and expense related to each.

Some expenses were very evident, such as administrative salaries, specific repairs, guards, etc. Others were less evident. Examples of these were money paid to Brinks for payroll handling, specific allocation of snow removal costs to terminal areas vs. hangars, vs. runways, etc.

To handle the latter type of overlapping charges a method of recording total cost of this type operation was devised along with breakdowns showing the percentage of actual use time devoted to each project. A unit cost system was devised to make the charges readily applicable. These charges are not as perfect today as they will be in future years as time permits an averaging out of expenses.

Area Measured

The administration building is handled as a unit. All expenses directly attributable to this building are recorded. Every square foot of rental area within the building is measured and the total yearly cost proportioned to the space. With this basic cost per square foot of building established, the Commission works out an equitable plan of higher and lower rates, averaging at the established figure, to account for variations in the desirability of space.

Ground floor space runs a little above average as does ticket counter area, prices are slightly lower for the second floor and still lower on the third. Some compromises are necessary. A shoe shine booth occupies space which would be more profitably used in ticket counter space. Public convenience dictates provision of this service but the potential income does not justify normal space charges.

Other factors balance out this condition. A room used as a nursery, with travelers charged directly for its use, brings in more money than the same room would provide on a straight rental basis. Operated by the MAC, the nursery offsets some loss and provides another useful and highly praised public service. Not only are cribs provided for the children, a few toys, etc. but also a place for the mother to rest.

It boils down to this. What are the annual costs related to running this particular service, whether it is a runway, a hangar, ramp area, terminal, or what have you. What is the most equitable

Redistributed Federal-Aid Funds Spur 95 Airport Projects

The reapportionment of unobligated Federal-aid airport funds (AMERICAN AVIATION, February 15) made under Public Law 382 has resulted in the freeing of 95 airport construction and improvement projects, many of them at Class 4 and larger airports, that had been held up for some time because state apportionments and the discretionary fund were depleted.

From the more than $8,000,000 reapportioned to the states, CAA now has made tentative allocations totaling about $7,800,000 covering projects which its regional offices advise have been held back by the sponsors only because of the unavailability of matching Federal funds.

Projects benefitting from the reapportionment include the following:

Location and Airport Name	Federal Tentative Allocation	Sponsors' Matching Share	Total Funds	Proposed Work
Detroit—Wayne Major	$454,000	$1,403,000	$1,857,000	Land acquisition, easement acquisition for approach clearing, laying of water mains.
South Bend—St. Joseph County	63,500	67,500	130,000	Acquire land, pave private hangar area, fence airport boundary, approach clearance.
Los Angeles International	179,306	151,883	331,189	Complete boulevard underpass.
Miami International	500,000	500,000	1,000,000	Prepare new terminal site, pave roads and parkways, remove buildings, alter utilities, grade, drain, fill and landscape.
Atlanta Municipal	165,000	495,000	660,000	Purchase land for new runway.
Boise Air Terminal	129,868	94,252	224,120	Remodel administration building, install high-intensity lighting.
Chicago—O'Hare Field	500,000	700,000	1,200,000	Land acquisition, additions to administration building, paving additional apron.
Shreveport Municipal No. 2	375,000	375,000	750,000	Construction of administration building and tower.
Boston—Logan International	700,000	700,000	1,400,000	Grade, drain, pave, light instrument runway, taxiways and apron, parking areas and access road.
Minneapolis—Wold-Chamberlain	200,000	200,000	400,000	Pave 1 new runway, extend 1 runway, light 2 runways, auto parking lot and access road, apron and taxiways, turfing.
Minneapolis Flying Cloud	40,000	120,000	160,000	Acquire land.
Newark Airport	300,000	300,000	600,000	Grading and draining landing strip.
Chillicothe Municipal	125,000	180,000	305,000	Land acquisition, administration building, approach clearance, site preparation, driveways, utilities, pave 1 runway, taxiway and apron.
Akron Municipal	50,000	50,000	100,000	Prepare site for runway extension; extend NE-SW pavement; repair and replace surface on existing runway pavement.
Portland (Ore.)	50,300	39,700	90,000	Stage reconstruction N-S taxiways.
Greater Pittsburgh	300,000	350,000	650,000	Grade extension to E-W runway for ILS installation; extend paving, including lights, to 6,500 feet, acquire land for approach lights.
Providence—T. F. Green	300,000	350,000	650,000	Acquire land and grade, drain, pave, light NE/SW ILS runway and taxiways.
Knoxville—McGhee-Tyson	100,000	100,000	200,000	Enlarge administration building, pave aprons and taxiways, construct fence.
Houston Municipal	100,000	100,000	200,000	General and advance site preparation; construct taxiways and aprons; provide adequate lighting and miscellaneous facilities.
Greater Fort Worth International	575,000	575,000	1,150,000	Construct administration building; preparation of site; construct aprons and taxiways; provide adequate lighting.
Snyder, Texas—Scurry County	70,000	80,000	150,000	Acquire land; prepare site; pave runway, taxiways and apron; lighting, miscellaneous facilities.
San Antonio Municipal	150,000	150,000	300,000	Construct first stage of administration building; preparation of site; extend apron; provide miscellaneous facilities.
Norfolk, Va., Municipal	50,000	50,000	100,000	Complete apron and taxiway, paving and access road.
Seattle-Tacoma	170,000	190,000	360,000	Acquire land for approach lights; widen runway paving; widen taxiways.
Milwaukee—General Mitchell	100,000	100,000	200,000	Additional grading administration area and taxiway apron area; pave apron and taxiway; widen 1 runway; access road; ramp, utilities, parking area.
Manitowoc (Wisc.) Municipal	125,000	133,000	258,000	Additional land; grade, drain N/S runway and parallel taxiways and apron; pave 1 runway, taxiway and apron; clear approaches, elevated runway lights, etc.
San Jose (Calif.) Municipal	72,691	139,349	212,040	Construct additional taxiways; widen runway shoulders; improve lighting, land purchase, apron construction.

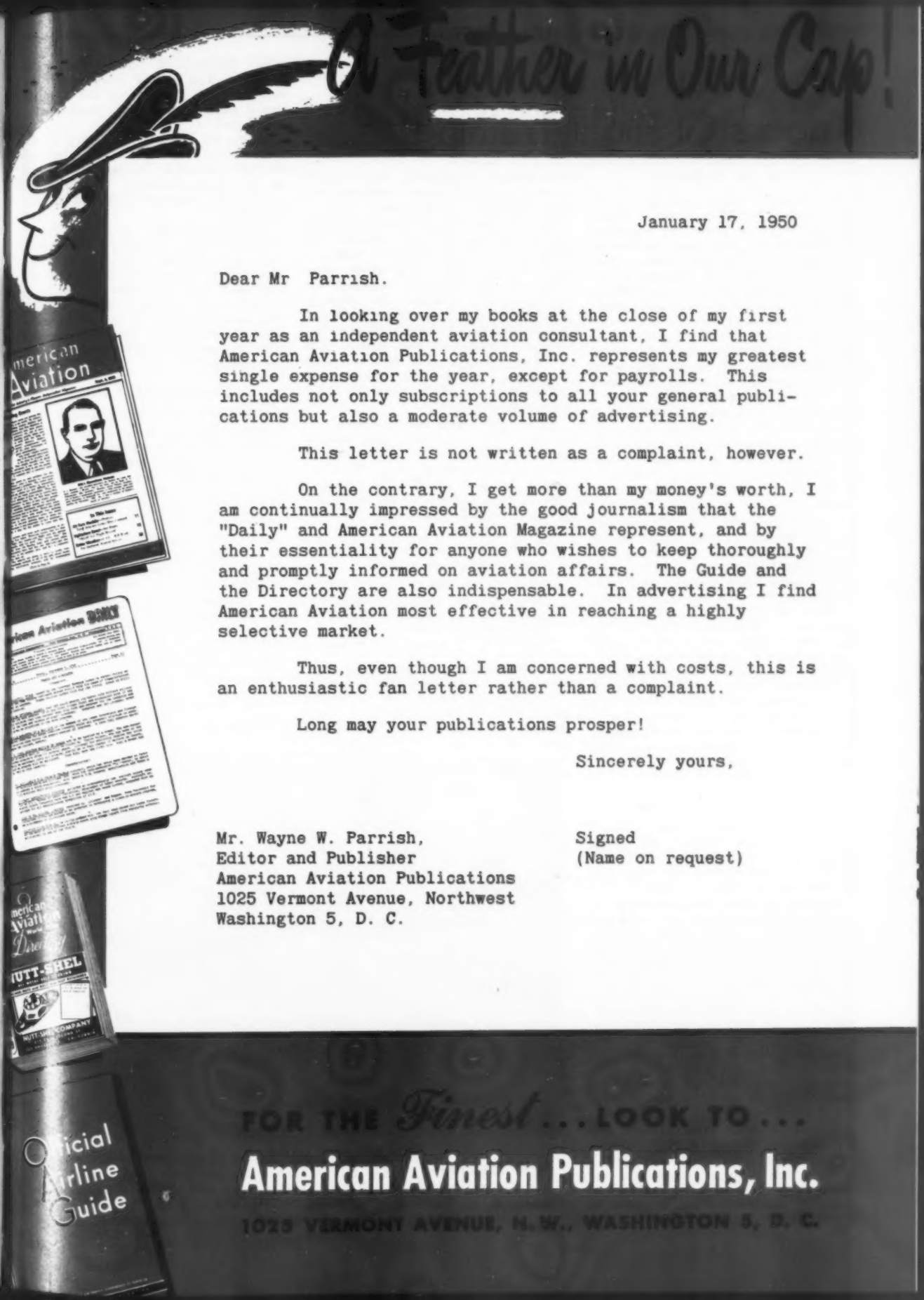
method of allocating these direct costs so that the airport will be placed on a self-sustaining basis. Most cities are not interested in writing off the capital investment in the airport by establishing high use charges. As at Minneapolis, they expect the city to finance the public airport as a public utility.

But to keep the capital investment sound, a reasonable percentage of its basic value it must be maintained. The city has installed the runways and doesn't expect to have the airlines pay for them. But runways must be maintained. Perhaps this year no major repairs are made. Next year a section may collapse, extensive areas may crack during the spring thaws and similar repairs will become mandatory. Since these are direct costs related to providing the continuing use of the facility, some deferred maintenance charges must be made as a matter of good business.

Ernst & Ernst set up a basic accounting system for the Municipal Airports Commission. It was an outline, a foundation on which to build a workable program. Within the MAC the controller, J. B. Crogen, has integrated this outline with the changing needs of the operation in succeeding months and with the requirements brought about by municipal policies which affect the Commission. Working with Aldrich and his staff, Crogen's department is accumulating the data which will determine tomorrow's airports charges.

Some people feel that such an accounting system is complex and requires a large staff to apply. This is not true in the case under observation. An airport commission with the range of activities at Minneapolis-St. Paul of necessity must keep records. This system provides an efficient directed method of doing so.

Nor was the cost of providing the basic accounting system very great. While not at liberty to quote prices, a look at the charges made by Ernst and Ernst brings about the realization that even the smaller airports could well afford the service.


A Feather in Our Cap!
January 17, 1950
Dear Mr Parrish.
In looking over my books at the close of my first year as an independent aviation consultant, I find that American Aviation Publications, Inc. represents my greatest single expense for the year, except for payrolls. This includes not only subscriptions to all your general publications but also a moderate volume of advertising.
This letter is not written as a complaint, however.
On the contrary, I get more than my money's worth, I am continually impressed by the good journalism that the "Daily" and American Aviation Magazine represent, and by their essentiality for anyone who wishes to keep thoroughly and promptly informed on aviation affairs. The Guide and the Directory are also indispensable. In advertising I find American Aviation most effective in reaching a highly selective market.
Thus, even though I am concerned with costs, this is an enthusiastic fan letter rather than a complaint.
Long may your publications prosper!
Sincerely yours,
Mr. Wayne W. Parrish,
Editor and Publisher
American Aviation Publications
1025 Vermont Avenue, Northwest
Washington 5, D. C.
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VA Report to Congress Knocks GI Flight Training

By B. J. WARD

An anti-G. I. flight training report, which is interpreted by aviation interests as a move to defeat the upcoming Taft-Teague Bill, has been forwarded to Congress by President Truman. The report, prepared by the Bureau of the Budget and the Veterans Administration, is an outspoken attack on alleged wide-scale abuses.

In the report, the VA questions the value of maintaining "an average of 23,000 veterans in commercial pilot training courses" at a cost "estimated to be in excess of $45,000,000 a year."

Rep. Olin J. Teague (D., Okla.), has charged the VA with exaggerating the cost of G. I. flight training and spreading misinformation in an effort to stop the Taft-Teague Bill, which will come to a vote in the House in the near feature.

"According to VA," Rep. Teague declared, "the bill, S. 2696, would double the overall cost of the GI training program from 2½ billion to 5 billion dollars. Veterans Administrator Carl Gray himself has affirmed this fantastic figure.

"Much of this mythical increase is based on the false assumption that the bill would extend the program cut-off date beyond July 25, 1951, as now provided by the law. The preamble of S. 2596 refers to the 'period of entitlement' without seeking to extend this period. It was not the intention of anyone connected with this bill to change the cut-off date. Knock out that argument, and VA's claims of added cost have little validity."

Support Taft-Teague

Aviation organizations and veterans organizations are behind the Taft-Teague Bill, which would simplify and clarify VA requirements for acceptance of veterans for flight training.

The bill provides that "education or training for the purpose of teaching a veteran to fly or related aviation courses in connection with his present or contemplated business or occupation shall not, in the absence of substantial evidence to the contrary, be considered avocational or recreational when a certificate in the form of an affidavit supported by corroborating affidavit by two competent disinterested persons, has been furnished by a physically qualified veteran stating that such education or training will be useful to him in earning a livelihood."

The GI training report admits that VA has been restricting flight training on the grounds that it is recreation. It states, "restrictions on avocational and recreational training have resulted in reducing the number of enrollees in such courses as dancing, photography, entertainment and public speaking, and *flight training.*" (Italics ours.)

VA records reveal that, of 74,503 written applications of veterans for flight training between July 1, 1948 and December 31, 1949, only 46,861 were approved. No figure is available for the number of veterans who seriously inquired of VA advisement centers about the possibility of flight training, but were discouraged at that source. But of those veterans who took the pains to submit written applications with justifications for flight training, 27,632 were rejected.

As an example of the "confusion" on the part of VA in handling flight training applications, the National Federation of Private Schools Association, Washington, D. C., points out that, "in the latter part of 1948, approval of GI flight applications varied from 13% to 68% between VA regions."

The following figures show the decline in flight training enrollment:

November 1, 1946	70,772
November 30, 1947	95,125
September 30, 1948	74,203
December 31, 1948	55,543
December 31, 1949	29,075

Besides admitting to restricting flight training and portraying it as overly costly and impractical, the VA report stated that of 29,075 veterans in flight training on December 31, 1949, 23,594 were enrolled in commercial pilot courses. The report questioned the value of such training on the grounds that it aims at an already "overcrowded occupation."

Wayne W. Weishaar, secretary of the Aeronautical Training Society, declared that this statement appears to be based on the false assumption that all commercial pilot trainees aspire to be airline pilots.

"The great majority of the trainees," he said, "expect to use their commercial pilot licenses as an adjunct to their occupations as salesmen, engineers, farmers, fixed base operators or pilots of executive or company-owned aircraft. The increasing use of the airplane by private business has made the occupation of commercial pilot anything but overcrowded."

Same Cut-Off Date

The VA report recommended that Congress take action to weed out "improper" courses for veterans and establish tighter minimum standards for training schools. The cut-off date for starting GI training courses remains July 25, 1951. All training must be concluded by July 25, 1956.

The effect of restrictive VA policies in discouraging various types of GI flight training is shown in the following tabulation from VA records:

Enrollment in GI Flight Courses	Dec. 1949	Nov. 1948
Total Flight Training	29,075	63,119
Elementary flight	3,075	11,669
Advanced flight	23,594	43,642
Flight instructor	604	1,192
Instrument	292	353
Multi-engine	162	297
Airline transport	71	.....
Glider	2	.....
Miscellaneous	561	5,966

New Ercoupe—Deliveries of the 1950 Club-Air Ercoupe will start in March, with a selling price of $3,995. The new model features a new paint design, engineering improvements and optional rudder pedals. The plane was shown publicly for the first time at the National Sportsman show in New York, February 18.

• **The Washington View**

For Local Operators

Latest on Contract Training

Specifications are in the mail for the training of USAF technicians by civilian schools. Bids will now be accepted by the Contractor Relations Officer, Air Materiel Command, Wright-Patterson AFB, Dayton, Ohio, for the technician training, which will be carried out as part of a program to test the desirability of civilian schools training military personnel. Only the larger schools may participate since AF will require a minimum capacity for about 275 students.

Specifications for the contract flight training in one of the four USAF basic flying schools are being prepared by the Air Materiel Command and are expected out in mid-March.

Flashing Lights Unpopular

CAB has received so many letters from local operators on a proposed regulation to require flashing position lights, on light aircraft used for night flying that they have extended the deadline for submission of comments into March. Airlines already are required to have position lights which flash 30 times a minute.

CAR Draft Release 49-8 states the belief of the Bureau of Air Safety, CAB, that "the use of flashing position lights on all aircraft operated at night is necessary to avoid collisions between aircraft on the ground as well as in the air. Flashing lights can be more quickly identified as aircraft lights, and they are not as likely to be confused with lights on the ground. We have made inquiry of the various manufacturers of flashing devices and have learned that at least one mechanically simple and inexpensive type may be obtained for small aircraft costing approximately from $3 to $4."

The new regulation would require a dual position light system with a flashing device for aircraft of 12,500 lbs. or more, and a single circuit flashing position light system for light aircraft. In the latter system, the flasher device must be a fail-safe type or provide a means of turning the position lights on steady if the flasher fails. If not an approved type, it must have 70 to 120 flashes per minute with an on-off ratio between 2:1 and 1:1. Additional weight involved in converting a steady light system to flashing lights will be less than a pound.

One airport operator objects to the requirement on the grounds that "flashing position lights is the approved and only possible night emergency signal."

A large manufacturer of light planes wrote, "We cannot agree with the cost figures that you represent in your notice of Proposed Rule Making" and estimated that installation of the system will cost about $10 based on equipment now on the market and making provision for radio noise shielding. CAB, however, maintains that the inexpensive equipment is available, and that the total cost of installing and shielding the system should not run over $10.

Against the regulation, an airport operator in West Virginia writes, "It is a moot question as to the value of the flasher lights except in city areas or around the busy airports. In this case, most airports require two-way communication before entering the control zone, and especially at night it is a rare thing for a non-two-way radio equipped aircraft to desire landing. On airways and away from the control zone of metropolitan airports, it is a question of *pilot alertness* for any light rather than the providing of flashing lights that will bring us safety."

Blank Budget

The CAA budget for 1950 is absolutely blank in the space marked "Funds for Installing Air Markers." Money for air marking was requested by the Air Marking Branch of CAA, but apparently the funds were crossed out somewhere en route to or in CAA Administrator Rentzel's office. Before the war, there were about 30,000 air markers in the United States. Now there are about 7,000 air markers, which is considerably short of CAA's announced goal of 100,000.

The question is, just what is CAA's goal for air marking? If it still is 100,000 air markers, which will provide airways well marked with directions, then eliminating the project from the budget is a peculiar approach. If CAA has decided that air markers are impractical, they should say so and stop agitating among State aviation and civic organizations to get the groups to install them; but if air markers are desirable and needed to make cross country flying safe enough and easy enough for the average person, CAA is neglecting a responsibility.

Crash Precautions

The Cornell Aeronautical Laboratory has found that it is safer to fasten seat belts a bit loosely rather than tightly, according to Bulletin 50-3 of the Flight Safety Foundation, New York. Tests showed that the least injury to the head results when the seat belt is adjusted to allow hip movement of three to four inches, which allows some of the impact force to be absorbed by the body and by friction with the seat. The angle of the belt should be about 60 degrees from horizontal.

Raising the arms to protect the face on impact is the wrong thing to do as raising the arms adds about 22 pounds at the end of the body's "rotating mass" and increases the impact blow to the head. They say to keep the arms low.

Another tip from the Flight Safety Foundation adds the warning, "If you are piloting a plane and are about to crash, pull up your legs, because it's usually the legs that trap you in there."

Navigation Made Easy

Aircraft Owners and Pilots Association is distributing its book on "Omnigation," written by Max Karant, to explain the use of the VHF omni ranges which are replacing low frequency radio ranges. The book is simple and readable—the best we have found on the subject. You should send for a copy and keep it in the airport office to answer questions.

A newsletter from Ansonia Airport, up in the timber at Shelton, Conn., reports that Editor Thomas Walsh sat down with a copy of "Omnigation" and concluded that if navigation could be that interesting and that easy, everyone should know about it. He is starting a Sealand Navigators Club "to acquaint its members with every aid to cross country flying from the pencil which draws a line on the map to the latest form of Radio Omnigation."

The club is open to anyone interested, pilots and otherwise. This sounds good, particularly from the viewpoint of interesting the people who never have flown.

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LOCAL OPERATIONS

30 Operators Form Air Taxi Conference

There is considerable speculation as to who will be appointed Executive Vice President (working director) of the National Air Taxi Conference. The appointment could become an important position if just one-ninth of the estimated 4,500 fixed base operators in business now were to join NATC at the membership rate of $120, the operating capital would be $60,000. Provision of charter air taxi service from airline stops to outlying airfields may take a period of years but bids fair to become a substantial activity.

The relationship of NATC to the National Aviation Trades Association was established in the organizational meeting February 6: any fixed base operator can participate in the privileges and benefits of NATC, if they pay a fair fee for the convenience and organization provided.

However, NATA will have a dominant voice in NATC issues as all regular members, who are the only voting members of the organization, must be NATA members. Associate and contributory members have no vote. In addition, the provision of the NATA executive committee that the president of the air taxi organization will automatically become NATA vice president of transportation indicates that the future relations will be that of parent and child.

Joseph Garside, newly elected NATC president, states, "We now have a tightly organized group committed to abide by the decisions of the conference and ready to take necessary steps to link the unscheduled charter flight and taxi services with the scheduled airlines."

The following representatives present at the meeting have bound themselves as NATC members to abide by the resolutions and by-laws of the conference.

Marth Ann Woodrum, Woodrum Flying Service, Roanoke, Va. and vice president Virginia Aviation Trade Association.

W. R. Ashburn, president, Ashburn Flying Service, Alexandria, Va.

James Wathan, manager, Hunter Flying Service, Cedar Rapids, Iowa.

R. S. Worthington, vice president, Piedmont Aviation, Inc., Winston-Salem, N. C.

Beverly E. Howard, president, Hawthorne Flying Service, Charleston, S. C.

John T. Griffin, president, East Coast Aviation, Inc., Bedford, Mass.

Charles P. O'Connor, O'Connor Aircraft Company, Albany, N. Y.

W. M. Post, Jr., president, Lehigh Aircraft Company, Allentown, Pa.

E. R. Dawson, secretary, Lehigh Aircraft Company, Allentown, Pa.

P. Brock Minor, president, Cavalier Aviation, Inc., Richmond, Va.

G. S. Ireland, president, Central Airport Flying Service, Camden, N. J.

Maurice W. Price, manager, Grossinger Airport, Liberty, N. Y.

Arch Denny, sales manager, Mallard Air Service, Teterboro Air Terminal, Teterboro, N. J.

Charles A. Parker, NATA executive director, Washington, D. C.

R. M. Smith, president, Echelon Aeronautical Service, Haddonfield, N. J.

John W. MacFarlane, Pennsylvania Aeronautics Commission, Harrisburg Airport, Pa.

W. H. Blakemore, Beechcraft sales manager, Atlantic Aviation Service, Wilmington, Del.

Sidney Nesbitt, president, Atlantic Aviation, Inc., Teterboro, N. J.

Wayne Weishaar, secretary, Aeronautical Training Society, Washington, D. C.

Everett King, King Aviation Service, King Airport, Taunton, Mass.

Charlie Delsordo, Ames School of Aviation, Ames Airport, Easton, Mass.

Joseph Garside, president, E. W. Wiggins Airways, Norwood, Mass.

B. J. Holleman, Jacksonville Airport Inc., Jacksonville, N. C.

Clay S. Swain, partner, Salisbury Aircraft Service, Salisbury, N. C.

Arthur C. Currey, Currey Flying Service, Galesburg, Ill.

Oscar L. Hosteller, proprietor, York Airport, York, Pa.

Joseph W. Hance, proprietor, Hance Flying Service, Hance Airport, Mich.

Samuel Freeman, president, Somerset Air Service, Inc., Badminster, N. J.

W. R. Landenslager, president, Red Bank Airport, Inc., Red Bank, N. J.

Thomas W. Robertson, president, Hadley Aircraft, Inc., New Brunswick, N. J.

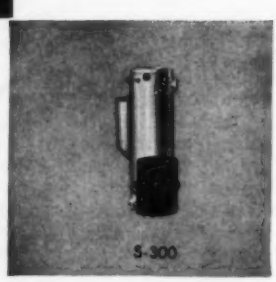
Edward Garbacz, co-owner, Central Flying Service, Little Rock, Ark.

Operation and Maintenance Conference for Lightplanes

Lightplane operators from eight states are expected to attend an operation and maintenance conference for private owners and operators of four-place executive and personal type aircraft at the Reading, Pa., Municipal Airport, April 22nd.

6,000,000 ROUTINE* MILES

"Routine*" is the word many airlines use to describe Janitrol heater maintenance. "Routine" because Janitrol heaters consistently establish high records of uniformly dependable operation—the rule rather than the exception. For instance, Mr. I. Edengran, Supervisor of Maintenance for Scandinavian Airlines System, Inc., (which operates six Janitrol-equipped DC-6 aircraft) writes:



* "Our DC-6 aircraft have now averaged approximately 2000 hours of flight time each, covering a total of nearly 6,000,000 miles, and during this time only routine inspection and maintenance has been required."

"The Aircraft Heating Digest"—Janitrol's new quarterly service publication on aircraft combustion type heaters is available free to aircraft engineering and maintenance personnel. Write for it, on your company letterhead please, to the "DIGEST" 400 Dublin, Columbus 16, Ohio.

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AIRCRAFT - AUTOMOTIVE DIVISION •
SURFACE COMBUSTION CORP., TOLEDO 1, OHIO

Gordon D. Brown Buys Rights to Weblock System

The manufacturing and sales rights to the Load-Set Weblock have been purchased by Gordon D. Brown & Associates of Los Angeles from the CJW Corp. The Load-Set Weblock is a tie-down system for aircraft cargo which has been adopted as standard on Pan American's Boeing Stratocruisers operating in the Pacific. It is the first item in the expansion of the Gordon D. Brown & Associates firm which will later include a manufacturing and distribution division.

Edwin C. Elsner, president of CJW and inventor of the weblock has joined the Brown concern as chief of design and Wilbur L. Horton, for 13 years superintendent of the test a laboratory at Douglas, has been appointed director of marketing.

AF to Move KC Unit

Within the next few months the Air Force training unit now located at Fairfax Field, Kansas City, Kansas, will be moved to the Naval Air Station, Olathe, Kan. This means the Air Force has decided to cancel its lease on Fairfax Field, the cite of TWA's major base which had earlier been threatened by proposed expansion of military training activities.

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Forms close 20 days preceding publication date. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Ave., N. W., Washington 5, D. C.

HELP WANTED

TRAFFIC MAN: Wanted traffic man with original, practical ideas suitable for feeder airline operation. Must have experience and be able to approach problems peculiar to feeder airline operations from a practical and economic standpoint. Write Keith Kahle, President and General Manager, Central Airlines, Inc., 6109 Camp Bowie Boulevard, Fort Worth, Texas.

ECONOMIC RESEARCH MAN: Wanted an economic research man capable of building exhibits for various proceedings before the Civil Aeronautics Board. Must have actual experience in building exhibits and must have original ideas. Write Keith Kahle, President and General Manager, Central Airlines, Inc., 6109 Camp Bowie Boulevard, Fort Worth, Texas.

POSITIONS WANTED

PART TIME EMPLOYMENT desired in New York City area. Presently employed by major U. S. airline. 10 years experience in Operations and Traffic on three continents, plus natural writing ability. Can devote approximately 25 hours weekly to affiliated pursuit. Box 688, American Aviation, 1025 Vermont Ave., N. W., Washington 5, D. C.

AIRLINE PILOT—3 yrs. airline, 2½ yrs. Army. ATR in DC-3. 3300 hrs. Desires perm. pos. with corp. as company pilot. Box 687, American Aviation, 1025 Vermont Ave., N. W., Washington 5, D. C.

FOR SALE

AEROSTANDS: 14, B-1, Model 10 hydraulic lift platform stands. Work range 3 to 10 ft. 1500 lbs. capacity. Excellent condition $300 each. 5 Model 20's work range 13 to 20 ft. excellent condition $450 each.
Aircraft Conversion & Maintenance Co., Box 536, Tucson, Arizona

FOR SALE

RADIO SALE—BC732A Control Head for localizer receiver new in original factory box, $1.65. Flexible Tuning Shafts for receiver and ADF, 95c and up. Replacement parts for BC733, BC375, BC348, BC433, ARN7. AN connectors, aircraft wire cable, plugs, dynamotors, condensers, registers, shockmounts, tubes. LONG ISLAND RADIO COMPANY, 164-21 Northern Blvd., Flushing, N. Y.

NEW AIRPORT EQUIPMENT FOR SALE—Erie figures 2125 and 2140 aviation pits, 25 and 40 G.P.M. respectively complete with meter, hose and air eliminator together with submerged turbine pumps of like capacities with ¾ H.P. and 1 H.P. explosion proof single phase motors and water separators. Reasonable. Box 686, American Aviation, 1025 Vermont Ave., N. W., Washington 5, D. C.

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2½" x 24" x 60"	3.30	14.83
3 " x 24" x 60"	3.52	15.80
4½" x 24" x 48"	4.56	16.50

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P. O. Box 1440-K Fort Worth 1, Texas

U. S. Agencies Buy 96 Planes in '51

Eleven departments of the Federal government will have a total of 1,117 airplanes in service by the end of fiscal year 1951, according to an AIA survey.

These government agencies plan to purchase 96 new aircraft during fiscal 1951. The figures do not include planes used strictly for military purposes, but do include Department of Defense aircraft used for transportation.

The Department of Defense is the largest aircraft-employing agency. It will operate 760 planes after purchasing 13 new ones for MATS and the Army Corps of Engineers.

Listed below are the other 10 plane-using agencies, showing the number to be operated in fiscal 1951 and planned purchases (in parentheses):

Commerce (CAA, CAB, Weather Bureau, Coast & Geodetic Survey)	109	(0)
Treasury (Coast Guard)	101	(51)
Interior	56	(17)
Agriculture (Entomology & Plant Quarantine, Forest Service)	52	(9)
NACA	12	(0)
Tennessee Valley Authority	8	(2)
Justice (Immigration & Naturalization)	8	(4)
Atomic Energy Commission	5	(0)
Federal Security Agency (Public Health)	4	(0)
State Dept.	2	(0)

CAA Specification Changes

Aircraft Specification A-805 authorizes oil filter Fram PB-5, Kit No. K-510 for the **Piper Model PA-17 Vagabond.**

Aircraft Specification 1A1 authorizes oil filter Fram PB-5, Kit No. K-520 for the **Piper PA-16.**

Aircraft Specification A-725 authorizes **McCauley 1090 propeller** with Lycoming 0-235-B engine only.

Aircraft Specification A-718 authorizes Sensenich 74FC propeller with Continental C-75 or C-85 engines for **Ercoupe 415-C and 415-CD.**

Aircraft Specification A-803 authorizes Flottorp 63L60 or 63L56 propeller for the **Mooney M-18.**

CAA Airworthiness Directives

Airworthiness Directive 49-50-1 requires inspection and, if necessary, replacement of generator drive coupling rubber discs by May 2, 1950 for **Continental** C-75,-85,-90,-125 and -145 engines with some serial number exceptions.

Airworthiness Directive 50-5-1 requires that a check be made of the major dimensions of control system Nicropress sleeves by March 1, 1950 for all **Piper** aircraft manufactured between November 1945 and November 1946.

Airplanes . . . C47 . . . C54 . . . B26 . . . DC3

Exceptionally Low Time

1 ea. DC-3 TOTAL TIME ONLY 401:00 hours; 24 VOLT ELECTRICAL SYSTEM
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1 ea. C-47-A Cargo T.T. 2281: Hrs. Bal. Same as Above $29,500
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1 ea. C-54-A Nose Section, Front 200" Good Condition $5,000
New 1830-43/65 P & W Engines $1250
NTSO 1830-43/65 Engine $600.00
Radio: Collins Art-13; 0-16/LFO; C-166 Jack Box; ARC-1; R5A/ARN-7.
C-47 Illustrated Parts Catalog $15.00.

RADIO

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ENGINES

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SUnset 3-7477 STanley 7-2151

WINGS OF YESTERDAY

25 Years Ago

The first flight with a single-piece magnesium propeller (25% lighter than duralumin) was successfully accomplished on February 6, 1925, at Curtiss Field, Garden City, N. Y.

•

The Board of Governors of the NAA adopted a resolution to the effect that the President of the U. S. be requested to designate December 17, the anniversary of man's conquest of the air, as "Aviation Day."

•

Col. James E. Fechet was appointed Assistant Chief of Air Service, succeeding General William Mitchell.

10 Years Ago

(In AMERICAN AVIATION)

Delta Air Lines was planning to inaugurate stewardess service when the two newly-acquired DC-2's were put on the line.

•

Formation of what was believed to be the first airline government travel department for the purpose of inducing federal employees to use the airways with the 15% discount available to them while traveling on official business was announced by United Air Lines.

•

The largest twin-engined transport ever built in the U. S., the Curtiss-Wright 36-passenger substratosphere craft, began ground tests at C-W's St. Louis Airplane Division, Robertson, Mo.

•

Leslie P. Arnold, first vice president and a director of Pennsylvania-Central Airlines, resigned that position February 20, 1940, to become assistant to the president of Eastern Air Lines.

LETTERS

Canada's License Burden

To the Editor:

Concerning your article in the February 15 issue of AMERICAN AVIATION (on new specialized ratings for mechanics), it should only be necessary to visit a few operators in Canada to learn what a terrific burden a variety of license requirements is to an operator.

Canada has four different types of mechanic licenses with approvals required for many categories of work, with the result that private aviation in Canada is almost non-existent in comparison with the United States. The problems in acquiring and keeping up these various licenses make them so rare that the holders sometimes charge both for actual work performed and also for signing for that work, thus adding to the expense and inconvenience of operating an airplane.

Actually an aircraft is sometimes in no better condition by virtue of these license requirements than it would be without them, since there are license holders whose charge on a signature is based upon a casual inspection, at best, of the aircraft involved. This is no reflection on Canadians, as such, since the same situation applies here, although to lesser degree because license requirements are not yet as onerous.

H. K. GILBERT, JR.
President
State Airlines
Charlotte, N. C.

BOOKS

SLIPSTREAM, by Eugene E. Wilson. Published by Whittlesey House, 330 W. 42nd St., New York, 328 pp., $4.50.

This autobiography of an ex-Navy officer who became one of the leaders in the aircraft industry during the period 1925-1941. Many prominent names of military and aviation men appear from time to time in what amounts to a rather hum-drum recital of events in the author's life. One wished that he had drawn more significance than he has done from the events of that period in which he played a leading role. Also that the book had been more carefully edited. Spelling the name of Jack Northrop and of the Northrop company with a "u," an all-too-common error, is rather inexcusable in a book of this nature.

Mr. Wilson was president and later chairman of the board of United Aircraft Corp., and was for a long time active in general aviation affairs. His earlier book, "Air Power for Peace," was a major contribution. He has been retired for several years.

TECHNICAL LITERATURE

FIRE EQUIPMENT: Ansul Chemical Co., Marinette, Wis., has released a new 20-page catalog on dry chemical fire extinguishing equipment. Information is included on the complete Ansul line. The fully-illustrated catalog lists improved model B extinguishers, piped systems, large stationary units, fire trucks, trailers, etc. Charts showing characteristics of approved hand fire equipment and comparative effectiveness graphs are provided.

DRAWING COMPOUNDS: Esso Standard Oil Co., 15 West 51st St., New York 19, N. Y., has released a 12-page illustrated booklet entitled "Drawing Compounds for Metals." The booklet contains detailed recommendations for selecting drawing compounds for use on various ferrous and non-ferrous metals in stamping, forming, wire drawing, tube drawing, tube bending, and stretch forming, as well as in hot tube bending, extrusion and forging.

FORK TRUCKS: Lewis-Shepard Products, Inc., 264 Walnut St., Watertown 72, Mass., has available a 16-page bulletin covering the complete line of Lewis-Shepard "Space-Master" electric fork trucks. Included are specifications and dimensional drawings of each standard model and data on different attachments which can be mounted on the trucks to convert them into special-purpose handling equipment.

HERMETIC SEALS: Hermetic Seal Products Co., 37 South 6th St., Newark 7, N. J., has published a 16-page catalog covering hermetic seals which withstand altitude, vacuum, pressure, temperature cycling, oils, chemicals and corrosion. Photographs introduce the different types of seals and engineering drawings give the details.

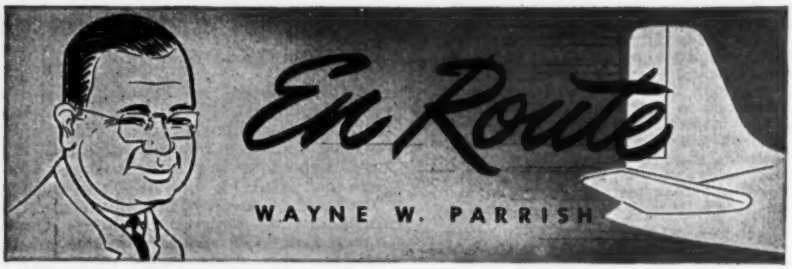
SOLDERING LINE: P. Wall Manufacturing Co., 226 Erie St., Grove City, Pa., has published a 24-page catalog describing its complete line of soldering products. These products include gasoline and kerosene blow torches, self-generating alcohol blow torches, electric soldering irons, solder, splicers furnaces, paraffin supplies, shop torches, etc.

INSTRUMENT HANDBOOK: Kollsman Instrument Division of Square D Company, 80-08 45th Ave., Elmhurst, N. Y., has published a new catalog of Kollsman precision aircraft instruments providing a ready-reference handbook giving complete instrument information. Available on request, the new catalog was specially designed as a reference book for engineers and technicians and contains information on the application, operation and performance characteristics of all types instruments along with installation instructions and diagrams.

En Route

(*Continued from Page* 54)

Sure, I forgot something. I always do. This time it was soap. No soap in European hotels. Can't remember everything, so I hop across the street and manage to buy some without English but with 120 lire at a small shop. Then off after changing clothes to the residence of **Ambassador James Dunn** for a reception. It's a big gala affair, all for the TWA press party. One pleasant surprise was to find **Maggie Smith**, Bert Holloway's secretary at Lockheed, Burbank, in Rome for a vacation. Receptions are wonderful things. Next issue: Audience with the Pope, calling on Franco in Madrid and other assorted items.



Road to Rome

(Here begins a diary of a flight to Rome, Madrid and Lisbon with TWA in connection with Holy Year and the opening of service to Milan).

Feb. 1. It is raining in Washington. It is raining in New York. Low ceilings in both places. Nothing to do but take the 5 p.m. Pennsylvania Railroad, overcrowded with the overflow from the airlines. First railroad trip in more than a year. How I hate the rough rails but nothing but admiration for the Pennsylvania for the way it shuttles passengers between Washington and New York every hour on the hour. What would this country do without its railroads? Flying is positively the finest form of transport but until we can fly 365 days out of the year with reliability, we'd better not let the rails go out of business. Curious how we airline fans always expect the rails to have seats for us when the planes are on the ground.

Feb. 2. Up early at the Lexington Hotel, favorite of all aviation folk, and run smack bang into **CAB Chairman J. J. O'Connell** in the lobby. He's unshaven, seems as surprised to see me in New York as I am to see him (Wonder what he was doing up there?). Told him I had just read about him in *Time* magazine, just out that morning. "Is the story good?", he asked quickly. I assured him it was. Also ran into **Joe Garside,** prexy of Wiggins Airways. Never fail to meet aviation people at the Lex.

✣ ✣ ✣

28 Pounds. I lug my bag through the driving rain to TWA's international station in the Waldorf a block away. Checked in with 28 pounds, plenty for a 10-day trip to Europe, but somewhat more than **Ralph Damon** carries with him. Up comes **Vernon Willis,** who until last December was Western's d.t.m. for Las Vegas and who now runs his own travel agency in that desert spot. Vern is all smiles, introduces me to his lovely wife, Tona, and we find that we're all going on the Flight 926. The Willis's are stopping at Paris, then going to Switzerland and Italy. It's their first trip to Europe and both are very excited.

I'm glad to have some company for the trip over, as I'm traveling behind the main press flight. I am to catch the gang in Rome. Vern tells me he's amazed at the slow response from steamship companies to his request for space. He's doing a lot of good travel business but said he never realized how far ahead the airlines are in taking care of requests until he got on the booking side of travel. Especially slow are the trans-Atlantic steamship companies, he says.

We take off at noon in a Constellation, right on time, and climb quickly through the soup and head for Gander. Full load on board. I have an aisle seat. Next to me is a woman returning to Zurich. It's her first plane crossing. **Purser John Bates,** with an All-American-boy smile, makes a big hit with the passengers. Hostess Betty Fowler is affable and efficient. The luncheon, except for its being served rather late out of New York, is good.

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What Ocean? Our skipper is **Capt. Leon H. Vestal** and he does a superb job talking to passengers. Just the right personality, just the right touch of humor. **First Officer Weldon S. Johnson** came back to talk to Vern Willis and myself. The other First Officer on board was **John H. Anderson.** Multiple crews over the Atlantic.

The stop at Gander is the shortest yet, not quite 45 minutes. And off we were across the pond and not once did I ever get a glance at it. How startling the advance the airplane has made in our lives when you can cross an ocean in a few hours without even seeing it. Our forefathers would have scoffed at such a thing ever happening in this world.

Whoever invented that ash tray with the trigger-spring top in the Constellation ought to be strung up. It takes two hands to use it. Ash tray lids ought to stay up when you want them to.

Feb. 3. Good old Shannon Airport. We file out for breakfast of ham and eggs. From now on it's lousy coffee by American standards. What a routine trip from New York, nothing to it, got a fair sleep over the pond, but TWA feeds its passengers too much too often. Blame the time zones on that. The Shannon stop is brief and off we go into the overcast toward Paris. On the plane is **Oliver Simmonds,** founder of Simmonds Aerocessories with companies in England and the U. S. He's now living in Nassau and on his way to Paris on a business trip. We chat about the coming election in Britain and the new method of growing vegetables which he's introducing into the Bahamas.

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Cafe au Lait. The clouds break before we reach France and there is that appealing French coastline and the countryside below us and in short order we're skirting Paris and circling for letdown at Orly. Sorry I'm not stopping off for a while. I say goodbye to the Willis's and go up to the transit passenger lounge on the second floor. Of course it's Paris. There's the little snack bar with fresh croissants to eat with your cafe au lait, the Perier bottles, the Grand Marnier sign, and the bartender with his little mustache. It's Paris, all right, it couldn't be anything else. And nearby is the woman with her magazine and souvenir stand, and the only English she pretends to know—"half a dollar." No matter whether it's two postcards or ten, if you have no francs, it's "half a dollar." Nice racket if you can get it. Fortunately Dan Wentz II, who runs our *American Aviation Daily,* had given me enough surplus francs from his collection to buy a few postcards.

The postcards, incidentally, are pictures of Air France Constellations, so I sent one each to **Bert Holloway** and **Carl Squier** of Lockheed, inquiring how they rate such effective propaganda.

A look round at my fellow passengers. Half the trans-Atlantic crowd get off at Paris, but the plane fills up again. By this time the majority are Europeans, the men with berets or black hombergs, the women dressed somberly. Stick with one airplane these days and nationalities and races and geography parade before you. It's good to see the European patronizing American airplanes. The entire world has confidence in U. S. planes and crews.

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Over the Alps. A new crew takes over at Orly with **Capt. Alfred E. MacKrille** as the skipper. Mac had flown the press party from New York to Shannon, then took a trial run into Milan, then picked up our plane at Paris and was going as far as Rome. Like Vestal, he had a good manner with passengers, more serious than Vestal, but spent more time talking over the intercom and gave many more details of speed altitude, etc., than any pilot I've flown with in a long time. Passengers really go for information like this.

Zurich was doubtful when we left Paris but opened up by the time we got there. In the distance were the snow-covered Alps. On the ground the transient waiting room was clean and neat as one expects to find in Switzerland. We dropped a few passengers but filled up again. TWA is doing fine business these days. I'm well impressed.

On over the Alps to Rome, fascinating views of the mountains and then into Italy with its barren hills and little towns dominated, always, by a church. Rome suddenly appears beneath the wing, St. Peter's, the Emmanual monument, the Coliseum, the many churches and basilicas, the Tiber river, then the remains of the aqueducts south of town, and in we go to Ciampino Airport as the sun is beginning to set in the west. The TWA service couldn't have been improved upon. The flight was routine throughout. A night and a day and here I am in Rome.

Immigration and customs at Rome are easy and rapid. In rushes **Adele Baracchi,** TWA's public relations assistant in Rome, who had come to fetch me into town, one of the cutest little gals this side of heaven. Big black eyes, a perfect doll. For a moment I forgot that I'm getting old and decrepit. Adele has a car and off we go to the Excelsior Hotel. I report in to **Gordon Gilmore,** TWA's public relation director, and check into my room.

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